三环集团
— SINCE 1970 —
潮州三环（集团）股份有限公司
CHAOZHOU THREE-CIRCLE(GROUP)CO.,LTD
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ADD:Sanhuan Industrial District,Fengtang Chaozhou,Guangdong,China

SPECIFICATION FOR APPROVAL

CUSTOMER：_____

PARTNAME：Multilayer Chip Ceramic Capacitor

SPECIFICATION：_____

APPROVAL SHEET NO.：DRAAW108M/2

ISSUED DATE：_____

MANUFACTURER			CUSTOMER		
APPROVED	CHECKED	PREPARED	APPROVED	CHECKED	PREPARED
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Document Serial No.	DRAAW108M/2	Page	39
Document Name	Specification for Multilayer Ceramic Chip Capacitor	Set date	2012.01

Version	Change Date	Pages	Content of Change	Registrant
B/0	2012/01/11	38	New Set	Qianjun Fang
B/1	2012/08/11	36	Added the carrier tape dimension of 2225 and 1808 sizes	Binbin Wang
C/0	2013/01/10	39	Version Change	Binbin Wang
D/0	2014/01/06	39	Updated the SGS Report	Binbin Wang
E/0	2014/05/06	44	Version Change	Guoxin Zhang
F/0	2015/02/10	44	Version Change	Guoxin Zhang
G/0	2016/05/15	44	Version Change	Guoxin Zhang
H/0	2017/07/01	44	Version Change	Guoxin Zhang
I/0	2020/02/12	44	Version Change	Guoxin Zhang
J/0	2021/01/07	39	Add 0201 size and X6S/X7T dielectrics; deleted dimensions above 1210 size	Guoxin Zhang
J/1	2021/03/25	39	Added the specification model of 0201 size and C0G dimension	Guoxin Zhang
K/0	2022/03/18	39	Version Change	Guoxin Zhang
K/1	2022/06/28	41	Version Change	Jiarui Chen
K/2	2022/08/29	59	Updated the range of capacitance	Jiarui Chen
K/3	2022/11/28	59	Added requirements of the RoHS, REACH and HF	Jiarui Chen
L/0	2023/1/16	59	Version Change	Jiarui Chen
L/1	2023-02-01	57	Update capacity	Jiarui Chen
L/2	2023-02-24	57	Update 0105 capacity	Jiarui Chen
L/3	2023-05-13	54	Update capacity, increase the tolerance range of crest welding and reflow welding, and add the introduction of standard remarks	Jiarui Chen
M/0	2023-09-15	61	Update capacity， Shenzhen base address and medium box package size	Jiarui Chen
M/1	2023-12-08	50	Update capacity、Belt size	Guoxin Zhang
M/2	2024-04-19	50	Update capacity	Jiarui Chen

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Catalog

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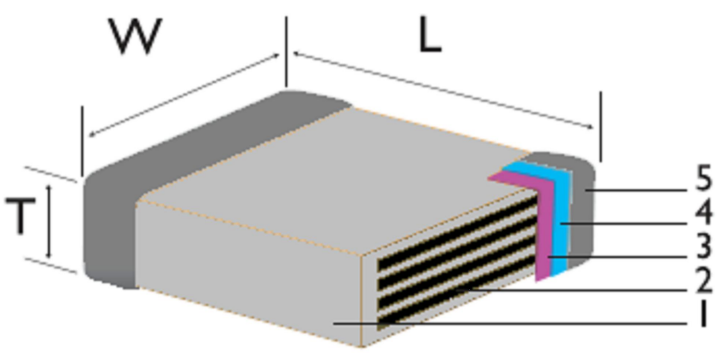
1. Types of Capacitor and Dielectric Material

※C0G（or NPO）： The capacitor of this kind dielectric material is considered as Class Ⅰ capacitor, including general capacitor and high frequency C0G capacitor。The electrical properties of C0G capacitor are the most stable one and have little change with temperature, voltage and time. They are suited for applications where low-losses and high-stability are required, such as filters, oscillators, and timing circuits.

※ X7R、X7S、X7T、X6R、X6S、X6T、X5R： material is a kind of material has high dielectric constant. The capacitor made of this kind material is considered as Class Ⅱ capacitor whose capacitance is higher than that of class Ⅰ. These capacitors are classified as having a semi-stable temperature characteristic and used over a wide temperature range, such in these kinds of circuits, DC-blocking, decoupling, bypassing, frequency discriminating etc.

2. Product Frame



No:	Name
1	Ceramic dielectric
2	Inner eletrode
3	Outer eletrode
4	Nickel
5	Tin

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3. General Product Parts Numbering System

(example)

TCC 0805 X5R 105 M 500 F T

Code of Ceramic Capacitor

Chip Size
Type=L×W
0105=0.40×0.20mm
0201=0.60×0.30mm
0402=1.00×0.50mm
0603=1.60×0.80mm
0805=2.00×1.25mm
1206=3.20×1.60mm
1210=3.20×2.50mm
1812=4.50×3.20mm
2220=5.70×5.00mm

Temperature Characteristic
C0G（NPO），
X7R,X7S,X7T,X6R ，
X6S, X6T,X5R

Capacitance
105=10×10^5
=1,000,000pF
5 means 10^5
Two significant digits followed by no of zero

Capacitance Tolerance
A=±0.05pF
B=±0.1pF
C=±0.25pF
D=±0.5pF
F=±1.0%
G=±2.0%
J=±5.0%
K=±10%
M=±20%
Z=-20/+80%

Rated Voltage
2R5=2.5V_{DC}
4R0=4.0V_{DC}
6R3=6.3V_{DC}
100=10V_{DC}
160=16V_{DC}
250=25V_{DC}
350=35V_{DC}
500=50V_{DC}
101=100V_{DC}
201=200V_{DC}
251=250V_{DC}
501=500V_{DC}
631=630V_{DC}
102=1000V_{DC}
202=2000V_{DC}

Thickness
Y:0.20mm
A:0.50mm
B:0.60mm
C:0.80mm
D:0.85mm
E:1.00mm
F:1.25mm
H:1.60mm
G:2.00mm
M:2.50mm
Z:0.30mm

Packing
B: bulk packaging in a bag
T: tape carrier packaging

Dielectrics Characteristic Group of Product

Dielectrics	Operating Temperature Range	Temperature Characteristic
C0G（NPO）	-55℃~+125℃	0±30ppm/℃
X7R	-55℃~+125℃	±15%
X7S	-55℃~+125℃	±22%
X7T	-55℃~+125℃	+22/-33%
X6R	-55℃~+105℃	±15%
X6S	-55℃~+105℃	±22%
X6T	-55℃~+105℃	+22/-33%
X5R	-55℃~+85℃	±15%

4. Product Capacitance Range

Size 0105(0402)

0105(0402)												
	COG系列				X7R系列				X5R系列			
Cp/V_{DC}	25	16	10	6.3	25	16	10	6.3	25	16	10	6.3
0R1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
0R2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
0R3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
0R4	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
0R5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
0R6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
0R7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
0R8	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
0R9	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
1R0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
1R1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
1R2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
1R3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
1R5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
1R6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
1R8	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2R0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2R2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2R4	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2R7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3R0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3R3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3R6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3R9	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4R0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4R3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4R7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5R0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5R1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5R6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
6R0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
6R2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
6R8	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
7R0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
7R5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
8R0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
8R2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
9R0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
9R1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
100	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
120	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
180	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
220	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
330	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
390					Y	Y	Y	Y	Y	Y	Y	Y
470					Y	Y	Y	Y	Y	Y	Y	Y
680					Y	Y	Y	Y	Y	Y	Y	Y
101					Y	Y	Y	Y	Y	Y	Y	Y
181					Y	Y	Y	Y	Y	Y	Y	Y
221					Y	Y	Y	Y	Y	Y	Y	Y
241					Y	Y	Y	Y	Y	Y	Y	Y
271					Y	Y	Y	Y	Y	Y	Y	Y
331					Y	Y	Y	Y	Y	Y	Y	Y
471						Y	Y	Y	Y	Y	Y	Y
681						Y	Y	Y	Y	Y	Y	Y
751						Y	Y	Y	Y	Y	Y	Y
102						Y	Y	Y	Y	Y	Y	Y
152									Y	Y	Y	Y
222									Y	Y	Y	Y
332									Y	Y	Y	Y
472									Y	Y	Y	Y
682									Y	Y	Y	Y
103									Y	Y	Y	Y

Above capacitance for reference only, actual capacitance range depends on the use requirement。

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SPECIFICATION FOR APPROVAL	Document No.
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Size 0201(0603)

0201(0603)																																		
	COG系列						X7R系列						X7S系列						X7T系列						X6S系列						X5R系列					
Cp/V_{DC}	50	35	25	16	10	6.3	50	35	25	16	10	6.3	50	35	25	16	10	6.3	50	35	25	16	10	6.3	50	35	25	16	10	6.3	50	35	25	16	10	6.3
0R1	Z	Z	Z	Z	Z	Z																														
0R2	Z	Z	Z	Z	Z	Z																														
0R3	Z	Z	Z	Z	Z	Z																														
0R4	Z	Z	Z	Z	Z	Z																														
0R5	Z	Z	Z	Z	Z	Z																														
0R6	Z	Z	Z	Z	Z	Z																														
0R7	Z	Z	Z	Z	Z	Z																														
0R8	Z	Z	Z	Z	Z	Z																														
0R9	Z	Z	Z	Z	Z	Z																														
1R0	Z	Z	Z	Z	Z	Z																														
1R1	Z	Z	Z	Z	Z	Z																														
1R2	Z	Z	Z	Z	Z	Z																														
1R3	Z	Z	Z	Z	Z	Z																														
1R5	Z	Z	Z	Z	Z	Z																														
1R6	Z	Z	Z	Z	Z	Z																														
1R8	Z	Z	Z	Z	Z	Z																														
2R0	Z	Z	Z	Z	Z	Z																														
2R2	Z	Z	Z	Z	Z	Z																														
2R4	Z	Z	Z	Z	Z	Z																														
2R7	Z	Z	Z	Z	Z	Z																														
3R0	Z	Z	Z	Z	Z	Z																														
3R3	Z	Z	Z	Z	Z	Z																														
3R6	Z	Z	Z	Z	Z	Z																														
3R9	Z	Z	Z	Z	Z	Z																														
4R0	Z	Z	Z	Z	Z	Z																														
4R3	Z	Z	Z	Z	Z	Z																														
4R7	Z	Z	Z	Z	Z	Z																														
5R0	Z	Z	Z	Z	Z	Z																														
5R1	Z	Z	Z	Z	Z	Z																														
5R6	Z	Z	Z	Z	Z	Z																														
6R0	Z	Z	Z	Z	Z	Z																														
6R2	Z	Z	Z	Z	Z	Z																														
6R8	Z	Z	Z	Z	Z	Z																														
7R0	Z	Z	Z	Z	Z	Z																														
7R5	Z	Z	Z	Z	Z	Z																														
8R0	Z	Z	Z	Z	Z	Z																														
8R2	Z	Z	Z	Z	Z	Z																														
9R0	Z	Z	Z	Z	Z	Z																														
9R1	Z	Z	Z	Z	Z	Z																														
100	Z	Z	Z	Z	Z	Z																														
220	Z	Z	Z	Z	Z	Z																														
330	Z	Z	Z	Z	Z	Z																														
390	Z	Z	Z	Z	Z	Z																														
470	Z	Z	Z	Z	Z	Z																														
680	Z	Z	Z	Z	Z	Z																														
101	Z	Z	Z	Z	Z	Z																														
181	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
221	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
241							Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
271							Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
331							Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
471							Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
681							Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
751							Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
102							Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
152							Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
222							Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
332							Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
472							Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
682							Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
103							Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
153										Z	Z	Z				Z	Z	Z				Z	Z	Z				Z	Z	Z				Z	Z	Z
223										Z	Z	Z				Z	Z	Z				Z	Z	Z				Z	Z	Z				Z	Z	Z
473										Z	Z	Z				Z	Z	Z				Z	Z	Z				Z	Z	Z				Z	Z	Z
683										Z	Z	Z				Z	Z	Z				Z	Z	Z				Z	Z	Z				Z	Z	Z
104										Z	Z	Z				Z	Z	Z				Z	Z	Z				Z	Z	Z				Z	Z	Z
224											Z	Z					Z	Z					Z	Z					Z	Z				Z	Z	Z
334												Z						Z						Z						Z					Z	Z
474												Z						Z						Z						Z					Z	Z
105																														Z					Z	Z

Above capacitance for reference only, actual capacitance range depends on the use requirement。

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Size0402（1005）

0402(1005)

	COG系列						X7R系列						X7S系列						X7T系列						X6S系列						X5R系列					
Cp/V_{DC}	50	35	25	16	10	6.3	50	35	25	16	10	6.3	50	35	25	16	10	6.3	50	35	25	16	10	6.3	50	35	25	16	10	6.3	50	35	25	16	10	6.3
0R1	A	A	A	A	A	A																														
0R2	A	A	A	A	A	A																														
0R3	A	A	A	A	A	A																														
0R4	A	A	A	A	A	A																														
0R5	A	A	A	A	A	A																														
0R6	A	A	A	A	A	A																														
0R7	A	A	A	A	A	A																														
0R8	A	A	A	A	A	A																														
0R9	A	A	A	A	A	A																														
1R0	A	A	A	A	A	A																														
1R1	A	A	A	A	A	A																														
1R2	A	A	A	A	A	A																														
1R3	A	A	A	A	A	A																														
1R5	A	A	A	A	A	A																														
1R6	A	A	A	A	A	A																														
1R8	A	A	A	A	A	A																														
2R0	A	A	A	A	A	A																														
2R2	A	A	A	A	A	A																														
2R4	A	A	A	A	A	A																														
2R7	A	A	A	A	A	A																														
3R0	A	A	A	A	A	A																														
3R3	A	A	A	A	A	A																														
3R6	A	A	A	A	A	A																														
3R9	A	A	A	A	A	A																														
4R0	A	A	A	A	A	A																														
4R3	A	A	A	A	A	A																														
4R7	A	A	A	A	A	A																														
5R0	A	A	A	A	A	A																														
5R1	A	A	A	A	A	A																														
5R6	A	A	A	A	A	A																														
6R0	A	A	A	A	A	A																														
6R2	A	A	A	A	A	A																														
6R8	A	A	A	A	A	A																														
7R0	A	A	A	A	A	A																														
7R5	A	A	A	A	A	A																														
8R0	A	A	A	A	A	A																														
8R2	A	A	A	A	A	A																														
9R0	A	A	A	A	A	A																														
9R1	A	A	A	A	A	A																														
100	A	A	A	A	A	A																														
220	A	A	A	A	A	A																														
330	A	A	A	A	A	A																														
390	A	A	A	A	A	A																														
470	A	A	A	A	A	A																														
680	A	A	A	A	A	A																														
101	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
181	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
221	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
241	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
271	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
331	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
471	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
681	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
751	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
102	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
152							A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
222							A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
332							A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
472							A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
682							A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
103							A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
153							A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
223							A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
473							A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
683							A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
104							A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
224									A	A	A	A			A	A	A	A			A	A	A	A			A	A	A	A	A	A	A	A	A	A
474											A	A					A	A					A	A			A	A	A	A	A	A	A	A	A	A
684																							A	A			A	A	A	A	A	A	A	A	A	A
105																							A	A			A	A	A	A	A	A	A	A	A	A
225																											A	A	A	A		A	A	A	A	A
475																														A					A	A
106																																				A

Above capacitance for reference only, actual capacitance range depends on the use requirement。

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三环集团
— SINCE 1970 —
潮州三环（集团）股份有限公司
CHAOZHOU THREE-CIRCLE(GROUP)CO.,LTD
地址：中国广东省潮州市凤塘三环工业城　邮编（Post Code）：515646
ADD:Sanhuan Industrial District,Fengtang Chaozhou,Guangdong,China

SPECIFICATION FOR APPROVAL	Document No.
	DRAAW108M/2

Size 0603(1608)

	0603(1608)																						
	COG系列							X7R系列								X7S系列							
Cp/VDC	500	250	200	100	50	35	25	250	200	100	50	35	25	16	10	6.3	250	200	100	50	35	25	16	10	6.3
0R2	C	C	C	C	C	C	C																		
0R3	C	C	C	C	C	C	C																		
0R4	C	C	C	C	C	C	C																		
0R5	C	C	C	C	C	C	C																		
0R6	C	C	C	C	C	C	C																		
0R7	C	C	C	C	C	C	C																		
0R8	C	C	C	C	C	C	C																		
0R9	C	C	C	C	C	C	C																		
1R0	C	C	C	C	C	C	C																		
1R1	C	C	C	C	C	C	C																		
1R2	C	C	C	C	C	C	C																		
1R3	C	C	C	C	C	C	C																		
1R5	C	C	C	C	C	C	C																		
1R6	C	C	C	C	C	C	C																		
1R8	C	C	C	C	C	C	C																		
2R0	C	C	C	C	C	C	C																		
2R2	C	C	C	C	C	C	C																		
2R4	C	C	C	C	C	C	C																		
2R7	C	C	C	C	C	C	C																		
3R0	C	C	C	C	C	C	C																		
3R3	C	C	C	C	C	C	C																		
3R6	C	C	C	C	C	C	C																		
3R9	C	C	C	C	C	C	C																		
4R0	C	C	C	C	C	C	C																		
4R3	C	C	C	C	C	C	C																		
4R7	C	C	C	C	C	C	C																		
5R0	C	C	C	C	C	C	C																		
5R1	C	C	C	C	C	C	C																		
5R6	C	C	C	C	C	C	C																		
6R0	C	C	C	C	C	C	C																		
6R2	C	C	C	C	C	C	C																		
6R8	C	C	C	C	C	C	C																		
7R0	C	C	C	C	C	C	C																		
7R5	C	C	C	C	C	C	C																		
8R0	C	C	C	C	C	C	C																		
8R2	C	C	C	C	C	C	C																		
9R0	C	C	C	C	C	C	C																		
9R1	C	C	C	C	C	C	C																		
100	C	C	C	C	C	C	C																		
120	C	C	C	C	C	C	C																		
150	C	C	C	C	C	C	C																		
180	C	C	C	C	C	C	C																		
200	C	C	C	C	C	C	C																		
220	C	C	C	C	C	C	C																		
270	C	C	C	C	C	C	C																		
300	C	C	C	C	C	C	C																		
330	C	C	C	C	C	C	C																		
390	C	C	C	C	C	C	C																		
470	C	C	C	C	C	C	C																		
560	C	C	C	C	C	C	C																		
680	C	C	C	C	C	C	C																		
820	C	C	C	C	C	C	C																		

Above capacitance for reference only, actual capacitance range depends on the use requirement。

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ADD:Sanhuan Industrial District,Fengtang Chaozhou,Guangdong,China

SPECIFICATION FOR APPROVAL	Document No.
	DRAAW108M/2

Size 0603(1608)

	0603(1608)																								
	COG系列							X7R系列									X7S系列								
Cp/VDC	500	250	200	100	50	35	25	250	200	100	50	35	25	16	10	6.3	250	200	100	50	35	25	16	10	6.3
101	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
121	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
151	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
181			C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
201			C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
221			C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
271			C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
331			C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
391			C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
471			C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
561				C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
681				C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
821				C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
102				C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
152				C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
182				C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
222				C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
272					C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
332					C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
472					C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
562					C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
682					C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
103					C	C	C		C	C	C	C	C	C	C	C		C	C	C	C	C	C	C	C
153										C	C	C	C	C	C	C			C	C	C	C	C	C	C
183										C	C	C	C	C	C	C			C	C	C	C	C	C	C
223										C	C	C	C	C	C	C			C	C	C	C	C	C	C
273										C	C	C	C	C	C	C			C	C	C	C	C	C	C
333										C	C	C	C	C	C	C			C	C	C	C	C	C	C
393										C	C	C	C	C	C	C			C	C	C	C	C	C	C
473										C	C	C	C	C	C	C			C	C	C	C	C	C	C
563										C	C	C	C	C	C	C			C	C	C	C	C	C	C
683										C	C	C	C	C	C	C			C	C	C	C	C	C	C
104										C	C	C	C	C	C	C			C	C	C	C	C	C	C
154											C	C	C	C	C	C				C	C	C	C	C	C
184											C	C	C	C	C	C				C	C	C	C	C	C
224											C	C	C	C	C	C				C	C	C	C	C	C
274											C	C	C	C	C	C				C	C	C	C	C	C
334											C	C	C	C	C	C				C	C	C	C	C	C
474											C	C	C	C	C	C				C	C	C	C	C	C
684											C	C	C	C	C	C				C	C	C	C	C	C
105											C	C	C	C	C	C				C	C	C	C	C	C
225													C	C	C	C						C	C	C	C
475															C	C								C	C
106																									
226																									

Above capacitance for reference only, actual capacitance range depends on the use requirement。

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三环集团
— SINCE 1970 —

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SPECIFICATION FOR APPROVAL	Document No.
	DRAAW108M/2

Size 0603(1608)

	0603(1608)																												
	X7T系列									X6S系列									X5R系列										
Cp/VDC	250	200	100	50	35	25	16	10	6.3	250	200	100	50	35	25	16	10	6.3	250	200	100	50	35	25	16	10	6.3
101	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
121	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
151	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
181	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
201	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
221	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
271	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
331	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
391	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
471	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
561	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
681	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
821	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
102	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
152	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
182	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
222	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
272	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
332	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
472	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
562	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
682	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
103		C	C	C	C	C	C	C	C		C	C	C	C	C	C	C	C		C	C	C	C	C	C	C	C	C
153			C	C	C	C	C	C	C			C	C	C	C	C	C	C			C	C	C	C	C	C	C	C
183			C	C	C	C	C	C	C			C	C	C	C	C	C	C			C	C	C	C	C	C	C	C
223			C	C	C	C	C	C	C			C	C	C	C	C	C	C			C	C	C	C	C	C	C	C
273			C	C	C	C	C	C	C			C	C	C	C	C	C	C			C	C	C	C	C	C	C	C
333			C	C	C	C	C	C	C			C	C	C	C	C	C	C			C	C	C	C	C	C	C	C
393			C	C	C	C	C	C	C			C	C	C	C	C	C	C			C	C	C	C	C	C	C	C
473			C	C	C	C	C	C	C			C	C	C	C	C	C	C			C	C	C	C	C	C	C	C
563			C	C	C	C	C	C	C			C	C	C	C	C	C	C			C	C	C	C	C	C	C	C
683			C	C	C	C	C	C	C			C	C	C	C	C	C	C			C	C	C	C	C	C	C	C
104			C	C	C	C	C	C	C			C	C	C	C	C	C	C			C	C	C	C	C	C	C	C
154				C	C	C	C	C	C				C	C	C	C	C	C				C	C	C	C	C	C	C
184				C	C	C	C	C	C				C	C	C	C	C	C				C	C	C	C	C	C	C
224				C	C	C	C	C	C				C	C	C	C	C	C				C	C	C	C	C	C	C
274				C	C	C	C	C	C				C	C	C	C	C	C				C	C	C	C	C	C	C
334				C	C	C	C	C	C				C	C	C	C	C	C				C	C	C	C	C	C	C
474				C	C	C	C	C	C				C	C	C	C	C	C				C	C	C	C	C	C	C
684				C	C	C	C	C	C				C	C	C	C	C	C				C	C	C	C	C	C	C
105				C	C	C	C	C	C				C	C	C	C	C	C				C	C	C	C	C	C	C
225						C	C	C	C					C	C	C	C	C				C	C	C	C	C	C	C
475							C	C	C							C	C	C					C	C	C	C	C	C
106								C	C							C	C	C						C	C	C	C	C
226																										C	C	C

Above capacitance for reference only, actual capacitance range depends on the use requirement。

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ADD:Sanhuan Industrial District,Fengtang Chaozhou,Guangdong,China

SPECIFICATION FOR APPROVAL	Document No.
	DRAAW108M/2

Size 0805(2012)

	0805(2012)																																	
	COG系列									X7R系列												X7S系列													
Cp/V_{DC}	630	500	250	200	100	50	35	25	16	1000	630	500	250	200	100	50	35	25	16	10	6.3	1000	630	500	250	200	100	50	35	25	16	10	6.3
0R2	B	B	B	B	B	B	B	B	B																								
0R3	B	B	B	B	B	B	B	B	B																								
0R4	B	B	B	B	B	B	B	B	B																								
0R5	B	B	B	B	B	B	B	B	B																								
0R6	B	B	B	B	B	B	B	B	B																								
0R7	B	B	B	B	B	B	B	B	B																								
0R8	B	B	B	B	B	B	B	B	B																								
0R9	B	B	B	B	B	B	B	B	B																								
1R0	B	B	B	B	B	B	B	B	B																								
1R1	B	B	B	B	B	B	B	B	B																								
1R2	B	B	B	B	B	B	B	B	B																								
1R3	B	B	B	B	B	B	B	B	B																								
1R5	B	B	B	B	B	B	B	B	B																								
1R6	B	B	B	B	B	B	B	B	B																								
1R8	B	B	B	B	B	B	B	B	B																								
2R0	B	B	B	B	B	B	B	B	B																								
2R2	B	B	B	B	B	B	B	B	B																								
2R4	B	B	B	B	B	B	B	B	B																								
2R7	B	B	B	B	B	B	B	B	B																								
3R0	B	B	B	B	B	B	B	B	B																								
3R3	B	B	B	B	B	B	B	B	B																								
3R6	B	B	B	B	B	B	B	B	B																								
3R9	B	B	B	B	B	B	B	B	B																								
4R0	B	B	B	B	B	B	B	B	B																								
4R3	B	B	B	B	B	B	B	B	B																								
4R7	B	B	B	B	B	B	B	B	B																								
5R0	B	B	B	B	B	B	B	B	B																								
5R1	B	B	B	B	B	B	B	B	B																								
5R6	B	B	B	B	B	B	B	B	B																								
6R0	B	B	B	B	B	B	B	B	B																								
6R2	B	B	B	B	B	B	B	B	B																								
6R8	B	B	B	B	B	B	B	B	B																								
7R0	B	B	B	B	B	B	B	B	B																								
7R5	B	B	B	B	B	B	B	B	B																								
8R0	B	B	B	B	B	B	B	B	B																								
8R2	B	B	B	B	B	B	B	B	B																								
9R0	B	B	B	B	B	B	B	B	B																								
9R1	B	B	B	B	B	B	B	B	B																								
100	B	B	B	B	B	B	B	B	B																								
120	B	B	B	B	B	B	B	B	B																								
150	B	B	B	B	B	B	B	B	B																								
180	B	B	B	B	B	B	B	B	B																								
200	B	B	B	B	B	B	B	B	B																								
220	B	B	B	B	B	B	B	B	B																								
270	B	B	B	B	B	B	B	B	B																								
300	B	B	B	B	B	B	B	B	B																								
330	B	B	B	B	B	B	B	B	B																								
390	B	B	B	B	B	B	B	B	B																								
470	B	B	B	B	B	B	B	B	B																								
560	B	B	B	B	B	B	B	B	B																								
680	B	B	B	B	B	B	B	B	B																								
820	B	B	B	B	B	B	B	B	B																								

Above capacitance for reference only, actual capacitance range depends on the use requirement。

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三环集团
— SINCE 1970 —

潮州三环（集团）股份有限公司
CHAOZHOU THREE-CIRCLE(GROUP)CO.,LTD
地址：中国广东省潮州市凤塘三环工业城　邮编（Post Code）：515646
ADD:Sanhuan Industrial District,Fengtang Chaozhou,Guangdong,China

SPECIFICATION FOR APPROVAL	Document No.
	DRAAW108M/2

Size 0805(2012)

	0805(2012)																																	
	COG系列									X7R系列													X7S系列												
Cp/V_{DC}	630	500	250	200	100	50	35	25	16	1000	630	500	250	200	100	50	35	25	16	10	6.3	1000	630	500	250	200	100	50	35	25	16	10	6.3
101	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
121	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
151	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
181	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
201	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
221	B	B	B	B	B	B	B	B	B	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
271	B	B	B	B	B	B	B	B	B	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
331	B	B	B	B	B	B	B	B	B	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D
391		D	D	B	B	B	B	B	B	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D
471		D	D	B	B	B	B	B	B	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D
561		F	F	B	B	B	B	B	B	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D
681		F	F	B	B	B	B	B	B	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D
821		F	F	B	B	B	B	B	B	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D
102		F	F	B	B	B	B	B	B	F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D	F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D
152					B	B	B	B	B		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D
182					B	B	B	B	B		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D
222					B	B	B	B	B		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D
272						B	B	B	B		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D
332						B/D	B/D	B/D	B/D		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D
472						B/D	B/D	B/D	B/D		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D
562						B/D	B/D	B/D	B/D			D/F	D/F	D/F	D/F	D	D	D	D	D	D			D/F	D/F	D/F	D/F	D	D	D	D	D	D
682						B/D	B/D	B/D	B/D			D/F	D/F	D/F	D/F	D	D	D	D	D	D			D/F	D/F	D/F	D/F	D	D	D	D	D	D
103						D	D	D	D			F	D/F	D/F	D/F	D	D	D	D	D	D			F	D/F	D/F	D/F	D	D	D	D	D	D
153													F	D/F	D/F	D	D	D	D	D	D				F	D/F	D/F	D	D	D	D	D	D
183													F	D/F	D/F	D	D	D	D	D	D				F	D/F	D/F	D	D	D	D	D	D
223													F	D/F	D/F	D	D	D	D	D	D				F	D/F	D/F	D	D	D	D	D	D
273													F	D/F	D/F	D	D	D	D	D	D				F	D/F	D/F	D	D	D	D	D	D
333													F	D/F	D/F	D	D	D	D	D	D				F	D/F	D/F	D	D	D	D	D	D
393														D/F	D/F	D	D	D	D	D	D					D/F	D/F	D	D	D	D	D	D
473														D/F	D/F	D	D	D	D	D	D					D/F	D/F	D	D	D	D	D	D
563														D/F	D/F	D	D	D	D	D	D					D/F	D/F	D	D	D	D	D	D
683														D/F	D/F	D	D	D	D	D	D					D/F	D/F	D	D	D	D	D	D
104														F	D/F	D	D	D	D	D	D					F	D/F	D	D	D	D	D	D
154															F	D	D	D	D	D	D						F	D	D	D	D	D	D
184															F	D	D	D	D	D	D						F	D	D	D	D	D	D
224															F	D/F	D/F	D	D	D	D						F	D/F	D/F	D	D	D	D
274															F	D/F	D/F	D	D	D	D						F	D/F	D/F	D	D	D	D
334															F	D/F	D/F	D	D	D	D						F	D/F	D/F	D	D	D	D
474															F	D/F	D/F	D/F	D	D	D						F	D/F	D/F	D/F	D/F	D	D
684															F	D/F	D/F	D/F	D/F	D	D						F	D/F	D/F	D/F	D/F	D	D
105															F	F	F	F	F	F	F						F	F	F	F	F	F	F
225																F	F	F	F	F	F							F	F	F	F	F	F
475																	F	F	F	F	F								F	F	F	F	F
106																			F	F	F										F	F	F
226																				F	F											F	F
476																																	

Above capacitance for reference only, actual capacitance range depends on the use requirement。

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三环集团
— SINCE 1970 —

潮州三环（集团）股份有限公司
CHAOZHOU THREE-CIRCLE(GROUP)CO.,LTD
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SPECIFICATION FOR APPROVAL	Document No.
	DRAAW108M/2

Size 0805(2012)

	0805(2012)																																		
	X7T系列												X6S系列											X5R系列											
Cp/V_{DC}	1000	630	500	250	200	100	50	35	25	16	10	6.3	1000	630	500	250	200	100	50	35	25	16	10	6.3	1000	630	500	250	200	100	50	35	25	16	10	6.3
101	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
121	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
151	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
181	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
201	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
221	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
271	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
331	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D
391	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D
471	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D
561	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D
681	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D
821	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D	D/F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D
102	F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D	F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D	F	D/F	D/F	D/F	D/F	D/F	B/D	B/D	B/D	B/D	B/D	B/D
152		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D
182		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D
222		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D
272		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D
332		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D
472		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D		D/F	D/F	D/F	D/F	D/F	D	D	D	D	D	D
562			D/F	D/F	D/F	D/F	D	D	D	D	D	D			D/F	D/F	D/F	D/F	D	D	D	D	D	D			D/F	D/F	D/F	D/F	D	D	D	D	D	D
682			D/F	D/F	D/F	D/F	D	D	D	D	D	D			D/F	D/F	D/F	D/F	D	D	D	D	D	D			D/F	D/F	D/F	D/F	D	D	D	D	D	D
103			F	D/F	D/F	D/F	D	D	D	D	D	D			F	D/F	D/F	D/F	D	D	D	D	D	D			F	F	D/F	D/F	D	D	D	D	D	D
153				F	D/F	D/F	D	D	D	D	D	D				F	D/F	D/F	D	D	D	D	D	D				F	D/F	D/F	D	D	D	D	D	D
183				F	D/F	D/F	D	D	D	D	D	D				F	D/F	D/F	D	D	D	D	D	D				F	D/F	D/F	D	D	D	D	D	D
223				F	D/F	D/F	D	D	D	D	D	D				F	D/F	D/F	D	D	D	D	D	D				F	D/F	D/F	D	D	D	D	D	D
273				F	D/F	D/F	D	D	D	D	D	D				F	D/F	D/F	D	D	D	D	D	D				F	D/F	D/F	D	D	D	D	D	D
333				F	D/F	D/F	D	D	D	D	D	D				F	D/F	D/F	D	D	D	D	D	D				F	D/F	D/F	D	D	D	D	D	D
393					D/F	D/F	D	D	D	D	D	D					D/F	D/F	D	D	D	D	D	D					D/F	D/F	D	D	D	D	D	D
473					D/F	D/F	D	D	D	D	D	D					D/F	D/F	D	D	D	D	D	D					D/F	D/F	D	D	D	D	D	D
563					D/F	D/F	D	D	D	D	D	D					D/F	D/F	D	D	D	D	D	D					D/F	D/F	D	D	D	D	D	D
683					D/F	D/F	D	D	D	D	D	D					D/F	D/F	D	D	D	D	D	D					D/F	D/F	D	D	D	D	D	D
104					F	D/F	D	D	D	D	D	D					D/F	D/F	D	D	D	D	D	D					D/F	D/F	D	D	D	D	D	D
154						F	D	D	D	D	D	D						F	D	D	D	D	D	D						F	D	D	D	D	D	D
184						F	D	D	D	D	D	D						F	D	D	D	D	D	D						F	D	D	D	D	D	D
224						F	D/F	D/F	D	D	D	D						F	D/F	D/F	D	D	D	D						F	D/F	D	D	D	D	D
274						F	D/F	D/F	D	D	D	D						F	D/F	D/F	D	D	D	D						F	D/F	D	D	D	D	D
334						F	D/F	D/F	D	D	D	D						F	D/F	D/F	D	D	D	D						F	D/F	D	D	D	D	D
474						F	D/F	D/F	D/F	D/F	D	D						F	D/F	D/F	D/F	D/F	D	D						F	D/F	D/F	D/F	D/F	D	D
684						F	D/F	D/F	D/F	D/F	D	D						F	D/F	D/F	D/F	D/F	D	D						F	D/F	D/F	D/F	D/F	D	D
105						F	F	F	F	F	F	F						F	F	F	F	F	F	F						F	F	F	F	F	F	F
225							F	F	F	F	F	F							F	F	F	F	F	F							F	F	F	F	F	F
475								F	F	F	F	F								F	F	F	F	F							F	F	F	F	F	F
106									F	F	F	F									F	F	F	F								F	F	F	F	F
226											F	F										F	F	F									F	F	F	F
476																																				F

Above capacitance for reference only, actual capacitance range depends on the use requirement。

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三环集团
— SINCE 1970 —

潮州三环（集团）股份有限公司
CHAOZHOU THREE-CIRCLE(GROUP)CO.,LTD
地址：中国广东省潮州市凤塘三环工业城　邮编（Post Code）：515646
ADD:Sanhuan Industrial District,Fengtang Chaozhou,Guangdong,China

SPECIFICATION FOR APPROVAL	Document No.
	DRAAW108M/2

Size 1206(3216)

	1206（3216）																							
	COG系列											X7R系列												
Cp/Vdc	2000	1000	630	500	250	200	100	50	35	25	16	2000	1000	630	500	250	200	100	50	35	25	16	10	6
0R5	D	D	D	D	D	D	D	D	D	D	D													
1R0	D	D	D	D	D	D	D	D	D	D	D													
1R1	D	D	D	D	D	D	D	D	D	D	D													
1R2	D	D	D	D	D	D	D	D	D	D	D													
1R3	D	D	D	D	D	D	D	D	D	D	D													
1R5	D	D	D	D	D	D	D	D	D	D	D													
1R6	D	D	D	D	D	D	D	D	D	D	D													
1R8	D	D	D	D	D	D	D	D	D	D	D													
2R0	D	D	D	D	D	D	D	D	D	D	D													
2R2	D	D	D	D	D	D	D	D	D	D	D													
2R4	D	D	D	D	D	D	D	D	D	D	D													
2R7	D	D	D	D	D	D	D	D	D	D	D													
3R0	D	D	D	D	D	D	D	D	D	D	D													
3R3	D	D	D	D	D	D	D	D	D	D	D													
3R6	D	D	D	D	D	D	D	D	D	D	D													
3R9	D	D	D	D	D	D	D	D	D	D	D													
4R0	D	D	D	D	D	D	D	D	D	D	D													
4R3	D	D	D	D	D	D	D	D	D	D	D													
4R7	D	D	D	D	D	D	D	D	D	D	D													
5R0	D	D	D	D	D	D	D	D	D	D	D													
5R1	D	D	D	D	D	D	D	D	D	D	D													
5R6	D	D	D	D	D	D	D	D	D	D	D													
6R0	D	D	D	D	D	D	D	D	D	D	D													
6R2	D	D	D	D	D	D	D	D	D	D	D													
6R8	D	D	D	D	D	D	D	D	D	D	D													
7R0	D	D	D	D	D	D	D	D	D	D	D													
7R5	D	D	D	D	D	D	D	D	D	D	D													
8R0	D	D	D	D	D	D	D	D	D	D	D													
8R2	D	D	D	D	D	D	D	D	D	D	D													
9R0	D	D	D	D	D	D	D	D	D	D	D													
9R1	D	D	D	D	D	D	D	D	D	D	D													
100	D	D	D	D	D	D	D	D	D	D	D													
120	D	D	D	D	D	D	D	D	D	D	D													
150	D	D	D	D	D	D	D	D	D	D	D													
180	D	D	D	D	D	D	D	D	D	D	D													
200	D	D	D	D	D	D	D	D	D	D	D													
220	D/E/	D	D	D	D	D	D	D	D	D	D													
270	D/E/	D	D	D	D	D	D	D	D	D	D													
300	D/E/	D	D	D	D	D	D	D	D	D	D													
330	D/E/	D	D	D	D	D	D	D	D	D	D													
390	D/E/	D	D	D	D	D	D	D	D	D	D													
470	D/E/	D	D	D	D	D	D	D	D	D	D													
560	D/E/	D	D	D	D	D	D	D	D	D	D													
680	D/E/	D	D	D	D	D	D	D	D	D	D													
820	D/E/	D	D	D	D	D	D	D	D	D	D													

Above capacitance for reference only, actual capacitance range depends on the use requirement.

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三环集团 — SINCE 1970 —

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SPECIFICATION FOR APPROVAL	Document No.
	DRAAW108M/2

Size 1206(3216)

	1206（3216）																																				
	C0G系列											X7R系列												X7S系列														
Cp/Vc	2000	1000	630	500	250	200	100	50	35	25	16	2000	1000	630	500	250	200	100	50	35	25	16	10	6	2000	1000	630	500	250	200	100	50	35	25	16	10	6.3
101	D/E/	D/E	D	D	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D
121		D/E	D	D	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D
151		D/E	D	D	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D
181		D/E	D	D	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D
201		D/E	D	D	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D
221		D/E	D	D	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D
271		D/E	D	D	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D
331		D/E	D	D	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D
391		D/E	D	D	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D
471		D/E	D	D	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D
561		D/E	D	D	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D
681		D/E	D	D	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D
821		D/E	D	D	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D
102		D/E/	D	D	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D
152			D	D	D	D	D	D	D	D	D	H	F	F	F	F	F	D	D	D	D	D	D	D	H	F	F	F	F	F	D	D	D	D	D	D	D
182			D	D	D	D	D	D	D	D	D	H	F	F	F	F	F	D	D	D	D	D	D	D	H	F	F	F	F	F	D	D	D	D	D	D	D
222			D	D	D	D	D	D	D	D	D	H	F	F	F	F	F	D	D	D	D	D	D	D	H	F	F	F	F	F	D	D	D	D	D	D	D
272				D	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D
332				D	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D
472							D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D
562							D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D
682							D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D
103							D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D
153													F	F	F	F	F	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D
183													F	F	F	F	F	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D
223													F	F	F	F	F	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D
273														H	H	F	F	D	D	D	D	D	D	D			H	H	F	F	D	D	D	D	D	D	D
333														H	H	F	F	D	D	D	D	D	D	D			H	H	F	F	D	D	D	D	D	D	D
393														H	H	F	F	D	D	D	D	D	D	D			H	H	F	F	D	D	D	D	D	D	D
473														H	H	F	F	D	D	D	D	D	D	D			H	H	F	F	D	D	D	D	D	D	D
563															H	F	F	D	D	D	D	D	D	D				H	F	F	D	D	D	D	D	D	D
683															H	F	F	D	D	D	D	D	D	D				H	F	F	D	D	D	D	D	D	D
104															H	F	F	D	D	D	D	D	D	D				H	F	F	D	D	D	D	D	D	D
154																H	H	D	D	D	D	D	D	D					H	H	D	D	D	D	D	D	D
184																H	H	D	D	D	D	D	D	D					H	H	D	D	D	D	D	D	D
224																H	H	D	D	D	D	D	D	D					H	H	D	D	D	D	D	D	D
274																		D	D	D	D	D	D	D							D	D	D	D	D	D	D
334																		D	D	D	D	D	D	D							D	D	D	D	D	D	D
474																		F	F	F	F	F	F	F							F	F	F	F	F	F	F
684																		F/H	F/H	F/H	F	F	F	F							F/H	F/H	F/H	F	F	F	F
105																		H	F/	F/	F	F	F	F							H	F/H	F/H	F	F	F	F
205																		H	F/	F/	E	E	E	E							H	F/H	F/H	E	E	E	E
225																			H	H	F	F	F	F								H	H	F	F	F	F
475																			H	H	H	H	H	H								H	H	H	H	H	H
106																			H	H	H	H	H	H								H	H	H	H	H	H
226																							H	H												H	H

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SPECIFICATION FOR APPROVAL	Document No.
	DRAAW108M/2

Size 1206(3216)

1206（3216）

	X7T系列													X6S系列													X5R系列												
Cp/Vdc	2000	1000	630	500	250	200	100	50	35	25	16	10	6	2000	1000	630	500	250	200	100	50	35	25	16	10	6.3	2000	1000	630	500	250	200	100	50	35	25	16	10	6.3
101	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D
121	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D
151	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D
181	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D
201	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D
221	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D
271	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D
331	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D
391	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D
471	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D
561	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D
681	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D
821	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D
102	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D	F	F	F	F	F	F	D	D	D	D	D	D	D
152	H	F	F	F	F	F	D	D	D	D	D	D	D	H	F	F	F	F	F	D	D	D	D	D	D	D	H	F	F	F	F	F	D	D	D	D	D	D	D
182	H	F	F	F	F	F	D	D	D	D	D	D	D	H	F	F	F	F	F	D	D	D	D	D	D	D	H	F	F	F	F	F	D	D	D	D	D	D	D
222	H	F	F	F	F	F	D	D	D	D	D	D	D	H	F	F	F	F	F	D	D	D	D	D	D	D	H	F	F	F	F	F	D	D	D	D	D	D	D
272		F	F	F	F	F	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D
332		F	F	F	F	F	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D
472		F	F	F	F	F	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D
562		F	F	F	F	F	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D
682		F	F	F	F	F	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D
103		F	F	F	F	F	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D
153		F	F	F	F	F	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D
183		F	F	F	F	F	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D
223		F	F	F	F	F	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D		F	F	F	F	F	D	D	D	D	D	D	D
273			H	H	F	F	D	D	D	D	D	D	D			H	H	F	F	D	D	D	D	D	D	D			H	H	F	F	D	D	D	D	D	D	D
333			H	H	F	F	D	D	D	D	D	D	D			H	H	F	F	D	D	D	D	D	D	D			H	H	F	F	D	D	D	D	D	D	D
393			H	H	F	F	D	D	D	D	D	D	D			H	H	F	F	D	D	D	D	D	D	D			H	H	F	F	D	D	D	D	D	D	D
473			H	H	F	F	D	D	D	D	D	D	D			H	H	F	F	D	D	D	D	D	D	D			H	H	F	F	D	D	D	D	D	D	D
563				H	F	F	D	D	D	D	D	D	D				H	F	F	D	D	D	D	D	D	D				H	F	F	D	D	D	D	D	D	D
683				H	F	F	D	D	D	D	D	D	D				H	F	F	D	D	D	D	D	D	D				H	F	F	D	D	D	D	D	D	D
104				H	F	F	D	D	D	D	D	D	D				H	F	F	D	D	D	D	D	D	D				H	F	F	D	D	D	D	D	D	D
154					H	H	D	D	D	D	D	D	D					H	H	D	D	D	D	D	D	D					H	H	D	D	D	D	D	D	D
184					H	H	D	D	D	D	D	D	D					H	H	D	D	D	D	D	D	D					H	H	D	D	D	D	D	D	D
224					H	H	D	D	D	D	D	D	D					H	H	D	D	D	D	D	D	D					H	H	D	D	D	D	D	D	D
274							D	D	D	D	D	D	D							D	D	D	D	D	D	D							D	D	D	D	D	D	D
334							D	D	D	D	D	D	D							D	D	D	D	D	D	D							D	D	D	D	D	D	D
474							F	F	F	F	F	F	F							F	F	F	F	F	F	F							F	F	F	F	F	F	F
684							F/H	F/H	F/H	F	F	F	F							F/H	F/H	F/H	F	F	F	F							F/H	F/H	F/H	F	F	F	F
105							H	F/	F/	F	F	F	F							H	F/	F/	F	F	F	F							H	F/H	F/H	F	F	F	F
205							H	F/	F/	E	E	E	E							H	F/	F/	E	E	E	E							H	F/H	F/H	E	E	E	E
225							H	H	H	F	F	F	F								H	H	F	F	F	F							H	H	H	F	F	F	F
475								H	H	H	H	H	H								H	H	H	H	H	H								H	H	H	H	H	H
106								H	H	H	H	H	H								H	H	H	H	H	H								H	H	H	H	H	H
226											H	H	H											H	H	H										H	H	H	H
476																									H	H											H	H	H
107																																							H

Above capacitance for reference only, actual capacitance range depends on the use requirement.

三环集团
— SINCE 1970 —

潮州三环（集团）股份有限公司
CHAOZHOU THREE-CIRCLE(GROUP)CO.,LTD
地址：中国广东省潮州市凤塘三环工业城　邮编（Post Code）：515646
ADD:Sanhuan Industrial District,Fengtang Chaozhou,Guangdong,China

SPECIFICATION FOR APPROVAL	Document No.
	DRAAW108M/2

Size 1210(3225)

	1210(3225)																								
	X7R系列													X7S系列											
Cp V_{DC}	2000	1000	630	500	250	200	100	50	35	25	16	10	6.3	2000	1000	630	500	250	200	100	50	35	25	16	10	6.3
221	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
271	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
331	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
391	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
471	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
561	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
681	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
821	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
102	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
152	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
182	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
222	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
272	H	F	F	F	F	F	F	F	F	F	F	F	F	H	F	F	F	F	F	F	F	F	F	F	F	F
332	G	F	F	F	F	F	F	F	F	F	F	F	F	G	F	F	F	F	F	F	F	F	F	F	F	F
472	G	F	F	F	F	F	F	F	F	F	F	F	F	G	F	F	F	F	F	F	F	F	F	F	F	F
562	G	F	F	F	F	F	F	F	F	F	F	F	F	G	F	F	F	F	F	F	F	F	F	F	F	F
682	G	F	F	F	F	F	F	F	F	F	F	F	F	G	F	F	F	F	F	F	F	F	F	F	F	F
103	G	F	F	F	F	F	F	F	F	F	F	F	F	G	F	F	F	F	F	F	F	F	F	F	F	F
153		F	F	F	F	F	F	F	F	F	F	F	F		F	F	F	F	F	F	F	F	F	F	F	F
223		H	H	H	H	H	H	H	H	H	H	H	H		H	H	H	H	H	H	H	H	H	H	H	H
333		M	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G		M	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
473			H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G			H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
563			H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G			H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
683			H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G			H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
104			H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G			H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
154					H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G					H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
224					H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G					H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
334					H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G					H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
374					H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G					H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
474					H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G					H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
684						H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G						H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
105							H/G	H/G	H/G	H/G	H/G	H/G	H/G							H/G	H/G	H/G	H/G	H/G	H/G	H/G
225							M	M	M	M	M	M	M							M	M	M	M	M	M	M
475							M	M	M	M	M	M	M							M	M	M	M	M	M	M
106								M	M	M	M	M	M								M	M	M	M	M	M
226										M	M	M	M										M	M	M	M
476											M	M	M											M	M	M
107													M													M

Above capacitance for reference only, actual capacitance range depends on the use requirement.

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三环集团
— SINCE 1970 —

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ADD:Sanhuan Industrial District,Fengtang Chaozhou,Guangdong,China

SPECIFICATION FOR APPROVAL	Document No.
	DRAAW108M/2

Size 1210(3225)

1210(3225)

	X7T系列													X6S系列												X5R系列											
Cp V_{DC}	2000	1000	630	500	250	200	100	50	35	25	16	10	6.3	2000	1000	630	500	250	200	100	50	35	25	16	10	6.3	2000	1000	630	500	250	200	100	50	35	25	16	10	6.3
221	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
271	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
331	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
391	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
471	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
561	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
681	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
821	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
102	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
152	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
182	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
222	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
272	H	F	F	F	F	F	F	F	F	F	F	F	F	H	F	F	F	F	F	F	F	F	F	F	F	F	H	F	F	F	F	F	F	F	F	F	F	F	F
332	G	F	F	F	F	F	F	F	F	F	F	F	F	G	F	F	F	F	F	F	F	F	F	F	F	F	G	F	F	F	F	F	F	F	F	F	F	F	F
472	G	F	F	F	F	F	F	F	F	F	F	F	F	G	F	F	F	F	F	F	F	F	F	F	F	F	G	F	F	F	F	F	F	F	F	F	F	F	F
562	G	F	F	F	F	F	F	F	F	F	F	F	F	G	F	F	F	F	F	F	F	F	F	F	F	F	G	F	F	F	F	F	F	F	F	F	F	F	F
682	G	F	F	F	F	F	F	F	F	F	F	F	F	G	F	F	F	F	F	F	F	F	F	F	F	F	G	F	F	F	F	F	F	F	F	F	F	F	F
103	G	F	F	F	F	F	F	F	F	F	F	F	F	G	F	F	F	F	F	F	F	F	F	F	F	F	G	F	F	F	F	F	F	F	F	F	F	F	F
153		F	F	F	F	F	F	F	F	F	F	F	F		F	F	F	F	F	F	F	F	F	F	F	F		F	F	F	F	F	F	F	F	F	F	F	F
223		H	H	H	H	H	H	H	H	H	H	H	H		H	H	H	H	H	H	H	H	H	H	H	H		H	H	H	H	H	H	H	H	H	H	H	H
333		M	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G		M	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G		M	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
473			H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G			H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G			H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
563			H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G			H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G			H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
683			H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G			H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G			H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
104			H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G			H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G			H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
154					H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G					H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G					H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
224					H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G					H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G					H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
334					H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G					H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G					H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
374					H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G					H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G					H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
474					H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G					H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G						H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
684						H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G						H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G						H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
105							H/G	H/G	H/G	H/G	H/G	H/G	H/G							H/G	H/G	H/G	H/G	H/G	H/G	H/G							H/G	H/G	H/G	H/G	H/G	H/G	H/G
225							M	M	M	M	M	M	M							M	M	M	M	M	M	M							M	M	M	M	M	M	M
475							M	M	M	M	M	M	M							M	M	M	M	M	M	M							M	M	M	M	M	M	M
106								M	M	M	M	M	M								M	M	M	M	M	M							M	M	M	M	M	M	M
226										M	M	M	M										M	M	M	M									M	M	M	M	M
476											M	M	M											M	M	M										M	M	M	M
107													M													M												M	M

Above capacitance for reference only, actual capacitance range depends on the use requirement.

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三环集团
— SINCE 1970 —

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SPECIFICATION FOR APPROVAL	Document No.
	DRAAW108M/2

Size 1812(4532)

	1812(4532)																								
	X7R系列													X7S系列											
Cp V_{DC}	2000	1000	630	500	250	200	100	50	35	25	16	10	6.3	2000	1000	630	500	250	200	100	50	35	25	16	10	6.3
471	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
561	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
681	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
821	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
102	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
222	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
332	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
472	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
562	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
682	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
103	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
153		H	H	H	H	H	H	H	H	H	H	H	H		H	H	H	H	H	H	H	H	H	H	H	H
223		H	H	H	H	H	H	H	H	H	H	H	H		H	H	H	H	H	H	H	H	H	H	H	H
333		H	H	H	H	H	H	H	H	H	H	H	H		H	H	H	H	H	H	H	H	H	H	H	H
473		H	H	H	H	H	H	H	H	H	H	H	H		H	H	H	H	H	H	H	H	H	H	H	H
563		H	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G		H	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
683			G/M	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G			G/M	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
104			G/M	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G			G/M	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
224			G/M	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G			G/M	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
334					G/M	G/M	G/M	H/G	H/G	H/G	H/G	H/G	H/G					G/M	G/M	G/M	H/G	H/G	H/G	H/G	H/G	H/G
474					G/M	G/M	G/M	H/G	H/G	H/G	H/G	H/G	H/G					G/M	G/M	G/M	H/G	H/G	H/G	H/G	H/G	H/G
684					G/M	G/M	G/M	H/G	H/G	H/G	H/G	H/G	H/G					G/M	G/M	G/M	H/G	H/G	H/G	H/G	H/G	H/G
105					G/M	G/M	G/M	H/G	H/G	H/G	H/G	H/G	H/G					G/M	G/M	G/M	H/G	H/G	H/G	H/G	H/G	H/G
225							G/M	H/G	H/G	H/G	H/G	H/G	H/G							G/M	H/G	H/G	H/G	H/G	H/G	H/G
475										G/M	G/M	G/M	G/M										G/M	G/M	G/M	G/M
106										G/M	G/M	G/M	G/M										G/M	G/M	G/M	G/M
226										G/M	G/M	G/M	G/M										G/M	G/M	G/M	G/M

Above capacitance for reference only, actual capacitance range depends on the use requirement.

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电子邮箱（E-mail）：gyc@cctc.cc　　网址（Website）：www.cctc.cc

三环集团
— SINCE 1970 —

潮州三环（集团）股份有限公司
CHAOZHOU THREE-CIRCLE(GROUP)CO.,LTD
地址：中国广东省潮州市凤塘三环工业城　邮编（Post Code）：515646
ADD:Sanhuan Industrial District,Fengtang Chaozhou,Guangdong,China

SPECIFICATION FOR APPROVAL	Document No.
	DRAAW108M/2

Size 1812(4532)

1812(4532)

	X7T系列													X6S系列												X5R系列											
Cp V_{DC}	2000	1000	630	500	250	200	100	50	35	25	16	10	6.3	2000	1000	630	500	250	200	100	50	35	25	16	10	6.3	2000	1000	630	500	250	200	100	50	35	25	16	10	6.3
471	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
561	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
681	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
821	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
102	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
222	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
332	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
472	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
562	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
682	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
103	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
153		H	H	H	H	H	H	H	H	H	H	H	H		H	H	H	H	H	H	H	H	H	H	H	H		H	H	H	H	H	H	H	H	H	H	H	H
223		H	H	H	H	H	H	H	H	H	H	H	H		H	H	H	H	H	H	H	H	H	H	H	H		H	H	H	H	H	H	H	H	H	H	H	H
333		H	H	H	H	H	H	H	H	H	H	H	H		H	H	H	H	H	H	H	H	H	H	H	H		H	H	H	H	H	H	H	H	H	H	H	H
473		H	H	H	H	H	H	H	H	H	H	H	H		H	H	H	H	H	H	H	H	H	H	H	H		H	H	H	H	H	H	H	H	H	H	H	H
563		H	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G		H	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G		H	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
683			G/M	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G			G/M	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G			G/M	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
104			G/M	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G			G/M	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G			G/M	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
224			G/M	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G			G/M	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G			G/M	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G	H/G
334					G/M	G/M	G/M	H/G	H/G	H/G	H/G	H/G	H/G					G/M	G/M	G/M	H/G	H/G	H/G	H/G	H/G	H/G	H/G					G/M	G/M	G/M	H/G	H/G	H/G	H/G	H/G	H/G
474					G/M	G/M	G/M	H/G	H/G	H/G	H/G	H/G	H/G					G/M	G/M	G/M	H/G	H/G	H/G	H/G	H/G	H/G	H/G					G/M	G/M	G/M	H/G	H/G	H/G	H/G	H/G	H/G
684					G/M	G/M	G/M	H/G	H/G	H/G	H/G	H/G	H/G					G/M	G/M	G/M	H/G	H/G	H/G	H/G	H/G	H/G	H/G					G/M	G/M	G/M	H/G	H/G	H/G	H/G	H/G	H/G
105					G/M	G/M	G/M	H/G	H/G	H/G	H/G	H/G	H/G					G/M	G/M	G/M	H/G	H/G	H/G	H/G	H/G	H/G	H/G					G/M	G/M	G/M	H/G	H/G	H/G	H/G	H/G	H/G
225						G/M	H/G	H/G	H/G	H/G	H/G	H/G	H/G						G/M	H/G	H/G	H/G	H/G	H/G	H/G	H/G							G/M	H/G	H/G	H/G	H/G	H/G	H/G
475										G/M	G/M	G/M	G/M										G/M	G/M	G/M	G/M										G/M	G/M	G/M	G/M
106										G/M	G/M	G/M	G/M										G/M	G/M	G/M	G/M										G/M	G/M	G/M	G/M
226										G/M	G/M	G/M	G/M										G/M	G/M	G/M	G/M										G/M	G/M	G/M	G/M

Size 2220(5750)

2220(5750)

	X7R系列										X7S系列									
Cp V_{DC}	2000	1000	630	500	250	200	100	50	35	25	2000	1000	630	500	250	200	100	50	35	25
221	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
271	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
331	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
391	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
471	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
561	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
681	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
821	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
102	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
222	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
332	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
472	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
562	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
682	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
103	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
153		F/H	F/H	H	H	H	H	H	H	H		F/H	F/H	H	H	H	H	H	H	H
223		H	H	H	H	H	H	H	H	H		H	H	H	H	H	H	H	H	H
333		H	H	H	H	H	H	H	H	H		H	H	H	H	H	H	H	H	H
473		H	H	H	H	H	H	H	H	H		H	H	H	H	H	H	H	H	H
563		G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M		G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M
683		G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M		G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M
104		G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M		G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M
224			G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M			G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M
334			G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M			G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M
474			G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M			G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M
684					G/M	G/M	G/M	G/M	G/M	G/M					G/M	G/M	G/M	G/M	G/M	G/M
105					G/M	G/M	G/M	G/M	G/M	G/M					G/M	G/M	G/M	G/M	G/M	G/M
225					G/M	G/M	G/M	G/M	G/M	G/M					G/M	G/M	G/M	G/M	G/M	G/M
475					G/M	G/M	G/M	G/M	G/M	G/M					G/M	G/M	G/M	G/M	G/M	G/M
685							G/M	G/M	G/M	G/M							G/M	G/M	G/M	G/M
106							G/M	G/M	G/M	G/M							G/M	G/M	G/M	G/M
226								G/M	G/M	G/M								G/M	G/M	G/M

Above capacitance for reference only, actual capacitance range depends on the use requirement.

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三环集团
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SPECIFICATION FOR APPROVAL	Document No.
	DRAAW108M/2

Size 2220(5750)

	2220(5750)																															
	X7T系列										X6S系列										X5R系列											
Cp V_{DC}	2000	1000	630	500	250	200	100	50	35	25	2000	1000	630	500	250	200	100	50	35	25	2000	1000	630	500	250	200	100	50	35	25
221	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
271	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
331	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
391	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
471	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
561	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
681	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
821	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
102	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
222	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
332	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
472	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
562	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
682	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
103	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
153		F/H	F/H	H	H	H	H	H	H	H		F/H	F/H	H	H	H	H	H	H	H	G	F/H	F/H	H	H	H	H	H	H	H
223		H	H	H	H	H	H	H	H	H		H	H	H	H	H	H	H	H	H	G	H	H	H	H	H	H	H	H	H
333		H	H	H	H	H	H	H	H	H		H	H	H	H	H	H	H	H	H	G	H	H	H	H	H	H	H	H	H
473		H	H	H	H	H	H	H	H	H		H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
563		G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M		G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M
683		G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M		G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M		G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M
104		G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M		G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M		G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M
224			G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M			G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M			G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M
334			G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M			G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M			G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M
474			G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M			G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M			G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M	G/M
684					G/M	G/M	G/M	G/M	G/M	G/M					G/M	G/M	G/M	G/M	G/M	G/M					G/M	G/M	G/M	G/M	G/M	G/M	G/M
105					G/M	G/M	G/M	G/M	G/M	G/M					G/M	G/M	G/M	G/M	G/M	G/M					G/M	G/M	G/M	G/M	G/M	G/M	G/M
225					G/M	G/M	G/M	G/M	G/M	G/M					G/M	G/M	G/M	G/M	G/M	G/M					G/M	G/M	G/M	G/M	G/M	G/M	G/M
475					G/M	G/M	G/M	G/M	G/M	G/M					G/M	G/M	G/M	G/M	G/M	G/M					G/M	G/M	G/M	G/M	G/M	G/M	G/M
685							G/M	G/M	G/M	G/M						G/M	G/M	G/M	G/M	G/M					G/M	G/M	G/M	G/M	G/M	G/M	G/M
106							G/M	G/M	G/M	G/M							G/M	G/M	G/M	G/M							G/M	G/M	G/M	G/M	G/M
226								G/M	G/M	G/M								G/M	G/M	G/M								G/M	G/M	G/M	G/M

Above capacitance for reference only, actual capacitance range depends on the use requirement.

电话（Tel）：（0768）6855932　　传真（Fax）：（0768）6859265
电子邮箱（E-mail）：gyc@cctc.cc　　网址（Website）：www.cctc.cc

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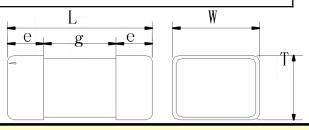
5. Dimensions



Chip Size：0105、0201、0402、0603、0805、1206、1210、1812、2220.

Type	L (mm)	W (mm)	e (mm)	g min (mm)	T（mm）/Code		
0105	0.40±0.02	0.20±0.02	0.06~0.15	0.1	0.20±0. 02	Y	
0105	0.40-0/0.1	0.20-0/0.1	0.06~0.15	0.1	0.20-0/0.1	Y	*4
0201	0.60±0.03	0.30±0.03	0.1~0.2	0.2	0.30±0. 03	Z	
0201	0.60-0.03/+0.1	0.30-0.03/+0.1	0.1~0.2	0.2	0.30-0.03/+0.1	Z	*2
0402	1.00±0.1	0.50±0.1	0.15~0.3	0.4	0.50±0.1	A	
0402	1.00-0.05/+0.2	0.50-0.05/+0.2	0.15~0.3	0.4	0.50-0.05/+0.2	A	*2
0402	1.00-0.05/+0.25	0.50-0.05/+0.25	0.15~0.3	0.4	0.50-0.05/+0.25	A	*5
0603	1.60±0.10	0.80±0.10	0.2~0.6	0.5	0.80±0.10	C	
0603	1.60±0.20	0.80±0.20	0.2~0.6	0.5	0.80±0.20	C	*1
0603	1.60-0/+0.3	0.80-0/+0.3	0.2~0.6	0.5	0.80-0/+0.3	C	*3
0805	2.00±0.10	1.25±0.10	0.2~0.7	0.7	0.60±0.10	B	
					0.85±0.10	D	
					1.25±0.10	F	
0805	2.00±0.20	1.25±0.20	0.2~0.7	0.7	0.60±0.10	B	*1
					0.85±0.20	D	
					1.25±0.20	F	
0805	2.00-0/+0.3	1.25-0/+0.3	0.2~0.7	0.7	1.25-0/+0.3	F	*3

*1 Identification: The model identification of this type is 1uF and above specifications of product size.

*2 Identification: The model identification of this type is 100nF and above specifications of product size.

*3 Identification: The model identification of this type is 4.7uF and above specifications of product size.

*4 Identification: The model identification of this type is 10nF and above specifications of product size.

*5 Identification: The model identification of this type is 10uF and above specifications of product size.

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Type	L (mm)	W (mm)	e (mm)	g min (mm)	T（mm）/Code		
1206	3.20±0.20	1.60±0.20	0.3~0.8	1.6	0.85±0.10	D	
					1.00±0.10	E	
					1.25±0.20	F	
					1.60±0.20	H	
1206	3.20±0.30	1.60±0.30	0.3~0.8	1.6	0.85±0.10	D	*1
					1.00±0.10	E	
					1.25±0.20	F	
					1.60±0.30	H	
1210	3.20±0.30	2.5±0.20	0.3~0.8	1.6	0.85±0.10	D	
					1.25±0.20	F	
					1.60±0.20	H	
					2.00±0.20	G	
					2.50±0.30	M	
1210	3.20±0.40	2.5±0.30	0.3~0.8	1.6	0.85±0.10	D	*1
					1.25±0.20	F	
					1.60±0.30	H	
					2.00±0.30	G	
					2.50±0.30	M	
1812	4.50±0.30	3.2±0.30	0.3~1.5	2.5	1.25±0.20	F	
					1.60±0.20	H	
					2.00±0.20	G	
					2.50±0.30	M	
1812	4.50±0.40	3.2±0.40	0.3~1.5	2.5	1.25±0.20	F	*1
					1.60±0.20	H	
					2.00±0.20	G	
					2.50±0.30	M	
2220	5.70±0.40	5.0±0.40	0.3~1.1	3.5	1.25±0.20	F	
					1.60±0.20	H	
					2.00±0.20	G	
					2.50±0.30	M	

*1 Identification:The model identification of this type is 1uF and above specifications of product size.

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6. Specification and Test Condition

6.1 Appearance

Dielectrics	Specification	Testing Condition
C0G（NPO）/X7R/X5R/X7T/X6S/X6R/X7S/X6T	l≤1/8L,w≤1/8W,t≤1/8T (None is acceptable， All judged unqualified)	Visual inspection.
		Reference Standard:IEC60384-21:2014

6.2 Dimensions

Dielectrics	Specification	Testing Condition
C0G（NPO）/X7R/X5R/X7T/X6S/X6R/X7S/X6T	Within the specified dimensions	Using calipers on micrometer
		Reference Standard:IEC60384-21:2014

6.3 Capacitance

Dielectrics	Specification	Testing Condition
C0G（NPO）	Within the specified tolerance A:±0.05pF;B:±0.1pF;C:±0.25pF; D:±0.5pF;J: ±5%	1.0±0.2Vrms, 1MHz±10% (C>1000 pF, 1.0±0.2Vrms, 1KHz±10%，)
X7R/X5R/X7T/X6S/X6R/X7S/X6T	Within the specified tolerance J: ±5%； K: ±10%； M: ±20%	1.0±0.2Vrms, 1KHz±10% （Cp＞10uF,0.5±0.1Vrms,120±24Hz）
Remarks: Testing temperature:25℃±3℃, testing humidity:＜70%RH； Aging treatment is required for the specifications of class Ⅱ medium. Conditions: the capacitor is heat/treated at 150°C for 1 hour and placed for48 hours before measuring。 Reference Standard:IEC60384-21:2014		

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6.4 Dissipation Factor

<table>
<tr><th>Dielectrics</th><th>Specification</th><th>Testing Condition</th></tr>
<tr><td>C0G（NPO）</td><td>Cp<30pF, Q≥400+20Cp;
Cp≥30pF, Q≥1000</td><td>1.0±0.2Vrms,1MHz±10% ,25℃
(Cp>1000pF,1.0±0.2Vrms,1KHz±10%)</td></tr>
<tr><td>X7R/X5R/X7T
/X6S/X6R/X7S/X6T</td><td>
<table>
<tr><th>Type</th><th>U_R</th><th>Range of capacitance</th><th>DF</th></tr>
<tr><td rowspan="2">0105</td><td rowspan="2">/</td><td>C≤0.01μF</td><td>≤7%</td></tr>
<tr><td>C＞0.01μF</td><td>≤10%</td></tr>
<tr><td rowspan="2">0201</td><td rowspan="2">/</td><td>C≤0.01μF</td><td>≤7%</td></tr>
<tr><td>C＞0.01μF</td><td>≤10%</td></tr>
<tr><td rowspan="2">0402</td><td rowspan="2">/</td><td>C≤0.1μF</td><td>≤7%</td></tr>
<tr><td>C＞0.1μF</td><td>≤10%</td></tr>
<tr><td rowspan="3">0603</td><td rowspan="2">≤25V</td><td>C≤0.47μF</td><td>≤7%</td></tr>
<tr><td>C＞0.47μF</td><td>≤10%</td></tr>
<tr><td rowspan="3">＞25V</td><td>C≤0.1μF</td><td>≤5%</td></tr>
<tr><td>0.1μF＜C≤0.22μF</td><td>≤7%</td></tr>
<tr><td>C＞0.22μF</td><td>≤10%</td></tr>
<tr><td rowspan="4">0805</td><td rowspan="2">≤25V</td><td>C≤1μF</td><td>≤7%</td></tr>
<tr><td>C＞1μF</td><td>≤10%</td></tr>
<tr><td rowspan="2">＞25V</td><td>C≤0.47μF</td><td>≤7%</td></tr>
<tr><td>C＞0.47μF</td><td>≤10%</td></tr>
<tr><td rowspan="4">1206</td><td rowspan="2">≤25V</td><td>C＜2.2μF</td><td>≤7%</td></tr>
<tr><td>2.2μF≤C≤47μF</td><td>≤10%</td></tr>
<tr><td rowspan="2">＞25V</td><td>C＜1μF</td><td>≤7%</td></tr>
<tr><td>1μF≤C≤47μF</td><td>≤10%</td></tr>
<tr><td rowspan="2">1210</td><td rowspan="2">/</td><td>C＜2.2μF</td><td>≤7%</td></tr>
<tr><td>2.2μF≤C≤47μF</td><td>≤10%</td></tr>
<tr><td rowspan="2">1812</td><td rowspan="2">/</td><td>C＜2.2μF</td><td>≤7%</td></tr>
<tr><td>2.2μF≤C≤47μF</td><td>≤10%</td></tr>
<tr><td rowspan="2">2220</td><td rowspan="2">/</td><td>C＜2.2μF</td><td>≤7%</td></tr>
<tr><td>2.2μF≤C≤47μF</td><td>≤10%</td></tr>
</table>
</td><td>1.0±0.2Vrms, 1KHz±10%,
(Cp＞10uF,0.5±0.1Vrms,
120±24Hz)</td></tr>
<tr><td colspan="3">Remarks: Testing temperature:25℃±3℃, testing humidity:＜70%RH； Aging treatment is required for the specifications of class Ⅱ medium. Conditions: the capacitor is heat/treated at 150°C for 1 hour and placed for48 hours before measuring。
Reference Standard:IEC60384-21:2014</td></tr>
</table>

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6.5 Insulation Resistance

Dielectrics	Specification	Testing Condition
C0G（NPO）/X7R/X5R/X7T/X6S/X7S/X6R/X6T	U_R≤50V ， More than 10 GΩ or 100Ω·F /CR, whichever is smaller.	U_R≤50V U=U_R; Charge Time:60±5sec Charge/discharge current:50mAmax Temperature:25℃
C0G（NPO）/X7R/X7T/X6S/X7S/X5R/X6R/X6T	U_R＞50V， More than 4 GΩ or 100Ω·F/CR , whichever is smaller.	U_R≤400V U=U_R U_R＞400V U=400V; Charge Time:60±5sec Charge/discharge current:50mAmax Temperature:25℃
Remarks: Testing temperature:25℃±3℃, testing humidity:＜70%RH. **Reference Standard:IEC60384-21:2014**		

6.6 Dielectric Strength

Dielectrics	Rated voltage range	Measuring Method
C0G（NPO）	U_R≤50V	Force 300%Rated voltage for 5second. Max current should not exceed 50 mA.
X7R/X5R/X7T/X6S/X7S/X6R/X6T	U_R≤50V	Force 250%Rated voltage for 5second. Max current should not exceed 50 mA.
C0G（NPO）/X7R/X7S/X7T/X5R/X6R/X6S/X6T	100V≤U_R＜500V	Force 200%Rated voltage for 5second. Max current should not exceed 50 mA.
	500V≤U_R＜2000V	Force 150%Rated voltage for 5second. Max current should not exceed 50 mA.
	U_R≥2000V	Force 120%Rated voltage for 5second. Max current should not exceed 30 mA.
Reference Standard:IEC60384-21:2014		

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6.7 Temperature Coefficient of Capacitance

<table>
<tr><th>Dielectrics</th><th>Specification</th><th colspan="5">Testing Condition</th></tr>
<tr><td rowspan="8">C0G（NPO）

X7R/X5R/X6R

X7T/X6T

X6S/X7S</td><td rowspan="8">Temperature coefficient within ±30ppm/℃；
Cp drift within ±0.2% or ±0.05pF

Capacitance change within ±15%

Capacitance change within +22%, -33%

Capacitance change within ±22%</td><td colspan="5">Measure capacitance under follow table list temperature:
Heat at 140~150℃ for 1 hour ，Leave at room temperature for 24 hours and then measure.
The text voltage is 1Vrms max.</td></tr>
<tr><td>步骤
STEP</td><td>C0G,
X7R,X7T</td><td>X6S</td><td>X5R</td><td>X7S</td></tr>
<tr><td>1</td><td>25 ±2</td><td>25 ±2</td><td>25 ±2</td><td>25 ±2</td></tr>
<tr><td>2</td><td>-55±3</td><td>-55±3</td><td>-55±3</td><td>-55±3</td></tr>
<tr><td>3</td><td>25 ±2</td><td>25 ±2</td><td>25 ±2</td><td>25 ±2</td></tr>
<tr><td>4</td><td>125±3</td><td>105±3</td><td>85±3</td><td>125±3</td></tr>
<tr><td>5</td><td>25 ±2</td><td>25 ±2</td><td>25 ±2</td><td>25 ±2</td></tr>
<tr><td colspan="7">1) C0G
The capacity drift is calculated by dividing the capacitance capacity measured in step 3 by the difference between the maximum and minimum errors measured in steps 1,3,and 5.
The calculation of the temperature coefficient is based on the capacitance measurement in step 3.
2) X7R/X7S/ X7T /X5R/X6R/X6S/X6T
Compared with the capacitance capacity at 25 ℃ ,the capacitance capacity changes within the temperature range within the required range.</td></tr>
<tr><td colspan="7">Remarks: 0201/223 and above specifications,0402/104 and above specifications,0603/334 and above specifications,0805/105 and above specifications,1206/1210 225 and above specifications,Test Voltage:0.1Vrms
Reference Standard:IEC60384-21:2014</td></tr>
</table>

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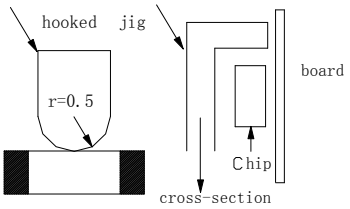
6.8 Adhesion

Dielectrics	Specification	Testing Condition
C0G（NPO）/X7R/X5R/X7T/X6S/X7S/X6R/X6T	No removal of the terminations or other defect shall occur.	The pressurizing force shall be 6N (=600g*f) and the duration of application shall be 10±1sec.（0201:2N） 
		Reference Standard:IEC60384-21:2014

6.9 Solderability of Termination

Dielectrics	Specification	Testing Condition
C0G（NPO）/X7R/X5R/X7T/X6S/X7S/X6R/X6T	95% min. coverage of both terminal electrodes and less than 5% have pin holes or rough spots.	Solder temperature: 245±5℃ Dipping time: 2±1 seconds. Completely soak both terminal electrodes in solder
		Reference Standard:IEC60384-21:2014

6.10 Resistance to leaching

Dielectrics	Specification	Testing Condition
C0G（NPO）/X7R/X5R/X7T/X6S/X7S/X6R/X6T	95% min. coverage of both terminal electrodes and less than 5% have pin holes or rough spots. No remarkable visual damage.	Solder temperature: 270±5℃ preheated: 120℃~150℃/60sec Dipping time: 10±1 seconds. Completely soak both terminal electrodes in solder
		Reference Standard:IEC60384-21:2014

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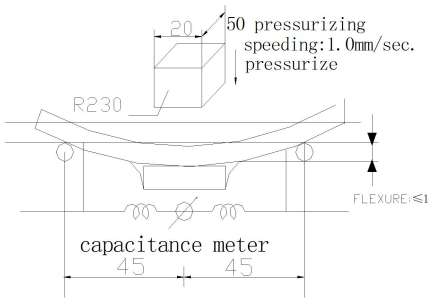
6.11 Bending

Dielectrics	Specification	Testing Condition
C0G（NPO）	No remarkable visual damage Cp change within ±5.0% or ±0.5pF, whichever is larger.	Solder the capacitor on testing substrate and put it on testing stand. The middle part of substrate shall successively be pressurized by pressuring rod at a rated of about 1.0mm/sec. Until the deflection become means of the 1.0mm. 
X7R/X5R/X7T /X6S/X7S/X6R/X6T	No remarkable visual damage Cp change ≤ ±10%	
Remarks: Text sample thickness:0201/0402:1.0mm;0603/0805/1206:1.6mm. **Reference Standard:IEC60384-21:2014**		

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6.12 Resistance to Soldering Heat

Dielectrics	Specification	Testing Condition
C0G（NPO）	No remarkable visual damage Cp change within ±2.5% or ±0.25pF, whichever is larger. DF meets initial standard value. IR meets initial standard value.	Soldering temperature: 270±5℃ Preheating: 120~150℃ 60sec. Dipping time: 10±1 seconds. Measurement to be made after being kept at room temperature for 24±2 (C0G) or 48±4(X7R/X7S/X7T/X5R/X6R/X6S/X6T) hours. Recovery for the following period under the standard condition after test. *Initial measurement for high dielectric constant type Perform a heat treatment at 140~150℃ for 1hr and let sit for 48±4hrs at room temperature. Perform the initial measurement.
X7R/X7S/X7T/X5R/X6R/X6S/X6T	No remarkable visual damage Cp change within ±7.5% DF meets initial standard value. IR meets initial standard value.	
		Reference Standard:IEC60384-21:2014

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6.13 Temperature Cycle

<table>
<tr><th>Dielectrics</th><th>Specification</th><th>Testing Condition</th></tr>
<tr><td rowspan="4">C0G（NPO）</td><td rowspan="4">No remarkable visual damage
Cp change within ±2.5% or ±0.25pF, whichever is larger.</td><td>To perform 5 cycles of the stated environment
<table>
<tr><th>Step</th><th>Temperature</th><th>Time</th></tr>
<tr><td>1</td><td>Min.operating Temp.+0/-3℃</td><td>30min</td></tr>
<tr><td>2</td><td>25℃</td><td>2~3 min</td></tr>
<tr><td>3</td><td>Max.operating Temp.+3/-0℃</td><td>30 min</td></tr>
</table></td></tr>
<tr><td rowspan="3">X7R/X5R/X7T /X6S/X7S/X6R/X6T</td><td rowspan="3">No remarkable visual damage
Cp change within ±7.5%</td><td>
<table>
<tr><td>4</td><td>25℃</td><td>2~3 min</td></tr>
</table>
Measurement to be made after being kept at room temperature for 24±2hrs (C0G) or 48±4hrs (X7R/X7S/X7T/X5R/X6R/X6S/X6T) at room temperature, then measure.
*Initial measurement for high dielectric constant type
Perform a heat treatment at 140~150℃ for 1hr and let sit for 48±4hrs at room temperature.
Perform the initial measurement.</td></tr>
<tr><td colspan="2">Reference Standard:IEC60384-21:2014</td></tr>
</table>

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6.14 Moisture Resistance ,steady state

Dielectrics	Specification	Testing Condition
C0G（NPO）	No remarkable visual damage Cp change within ±5% or ±0.5pF, whichever is larger. Cp<10pF, Q≥200+10Cp; 10≤Cp<30pF, Q≥275+2.5Cp Cp≥30pF, Q≥350 R*C≥1000MΩ or 10Ω·F, whichever is smaller	Test temperature: 40±2℃ Humidity: 90~95% RH Testing time: 500 ±12hrs Measurement to be made after being kept at room temperature for 24±2hrs (C0G) or 48±4hrs (X7R/X7S/X7T/X5R/X6R/X6S/X6T) *Initial measurement for high dielectric constant type Perform a heat treatment at 140~150℃ for 1hr and let sit for 48±4hrs at room temperature. Perform the initial measurement.
X7R/X7S/X7T/X5R /X6R/X6S/X6T	No remarkable visual damage Cp change within ±12.5% DF:Not more than 2 times of initial value R*C≥1000MΩ or 10Ω·F, whichever is smaller	
		Reference Standard:IEC60384-21:2014

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6.15 Damp heat with load

Dielectrics	Specification	Testing Condition
C0G（NPO）	No remarkable visual damage Cp change≤±7.5% or ±0.75pF, whichever is larger. Cp<30pF, Q≥100+10/3*Cp Cp≥30pF, Q≥200 R*C≥500MΩ or 5Ω·F, whichever is smaller	Test temperature: 40±2℃ Humidity: 90~95% RH Voltage: Ur≤500V，100% of the rated voltage； Ur＞500V， test voltage 500V. Charge/discharge current 50mA max Testing time: 500 ±12hrs Measurement to be made after being kept at room temperature for 24±2hrs (C0G) or 48±4hrs (X7R/X7S/X7T/X5R/X6R/X6S/X6T) *High dielectric constant capacitor： Pretreatment before experiment，heat treatment at 150℃ for 1hour, left at room temperature for 48 hours, then measured； Post-experimental treatment，heat treatment at 150℃ for 1hour, left at room temperature for 48 hours, then measured.
X7R/X7S/X7T/X5R /X6R/X6S/X6T	No remarkable visual damage Cp change≤±12.5% DF:Not more than 2 times of initial value R*C≥500MΩ or 5Ω·F, whichever is smaller	
Remarks:This reliability test is applicable to conventional products only, medium & high voltage products are inapplicable. **Reference Standard:IEC60384-21:2014**		

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6.16 Life Test

Dielectrics	Specification	Testing Condition
C0G（NPO）	No remarkable visual damage Cp change≤±3% or ±0.3pF, whichever is larger. Q≥350 (Cp≥30 pF) Q≥275+(2.5* Cp) (10 pF≤Cp<30 pF) Q≥200+10*Cp (Cp<10 pF) R*C≥1000MΩ or 5Ω·F, whichever is smaller	Test temperature:Max. Operating Temp. ±3℃ Voltage: U_R<100V 150% of the rated voltage（*Remarks） Charge/discharge current 50mA max Testing time: 1000 hrs Measurement to be made after being kept at room temperature for 24±2hrs (C0G) or 48±4hrs (X7R/X7S/X7T/X5R/X6R/X6S/X6T) *High dielectric constant capacitor： Pretreatment before experiment，heat treatment at 150℃ for 1hour, left at room temperature for 48 hours, then measured； Post-experimental treatment，heat treatment at 150℃ for 1hour, left at room temperature for 48 hours, then measured.
X7R/X7S/X7T/X5R/X6R/X6S/X6T	No remarkable visual damage Cp change≤±12.5% DF:Not more than 2 times of initial value R*C≥1000MΩ or 5Ω·F, whichever is smaller	

Remarks: IF Ur≥100V,the voltage shall be 1 times the rated voltage.

Remarks*:0201/104 and above specifications,0402/104 25V and above specifications,0603/105 25V and above specifications,0805/225 25V and above specifications,1206/475 25V and above specifications,1210/225 25V and above specifications,Test at 1 times rated voltage.

Reference Standard: QDRAA116-G1-2023（CCTC）

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7. Packing

7.1 Bulk Packing

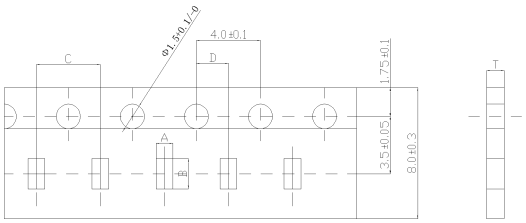
Standard packing 10Kpcs/bag; others are according to customer request.

7.2 Tape Packing

Type	Size (mm)			Number of tape (pcs/reel)	
	L	W	T	Paper Tape	Plastic Tape
0105	0.4	0.2	0.2	20000	N/A
0201	0.6	0.3	0.3	15,000	N/A
0402	1.0	0.5	0.5	10,000	N/A
0603	1.6	0.8	0.8	4,000	N/A
0805	2.0	1.25	≤0.85	4,000	N/A
			＞0.85	N/A	3,000
1206	3.2	1.6	≤0.85	4,000	N/A
			0.85＜T≤1.25	N/A	3,000
			1.6	N/A	2,000
1210	3.2	2.5	≤2.0	N/A	2,000
			＞2.0	N/A	1500
1812	4.6	3.2	≤2.0	N/A	1,000
			＞2.0	N/A	1000
2220	5.7	5.0	≤1.25	N/A	1,000
			＞1.25	N/A	700

7.2.1 Dimensions of Packing Paper

Type	A	B	C	D	T
0105	0.23±0.03	0.43±0.03	1.0±0.10	1.0±0.05	0.50max
0201	0.40±0.09	0.70±0.09	2.0±0.10	2.0±0.05	0.42max
0402	0.65±0.15	1.20±0.15	2.0±0.10	2.0±0.05	0.8max
0603	1.05±0.15	1.90±0.15	4.0±0.10	2.0±0.10	1.1max
0805	1.55±0.15	2.3±0.15	4.0±0.10	2.0±0.10	1.1max
1206	2.00±0.04	3.5±0.04	4.0±0.10	2.0±0.10	1.1max



(unit : mm)

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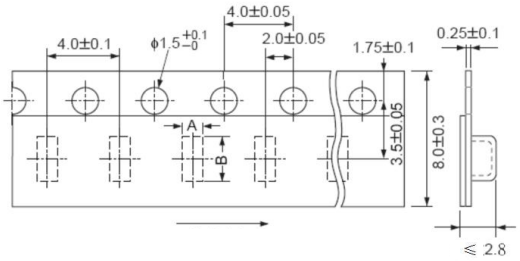
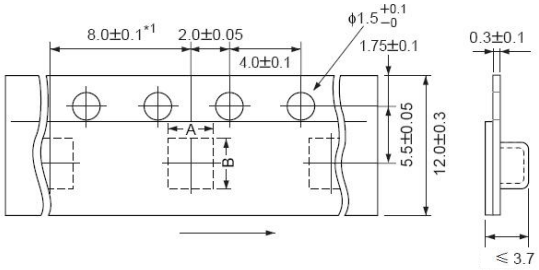
7.2.2 Dimensions of Embossed Packing

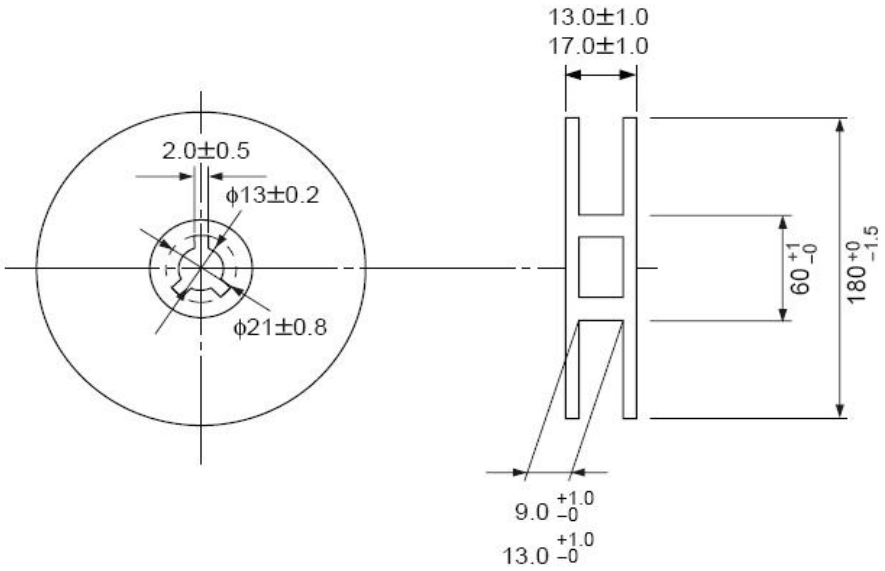


A：1.40±0.20 B：2.25±0.20 （0805）
A：1.90±0.20 B：3.50±0.20 （1206）
A：2.90±0.30 B：3.60±0.30 （1210）

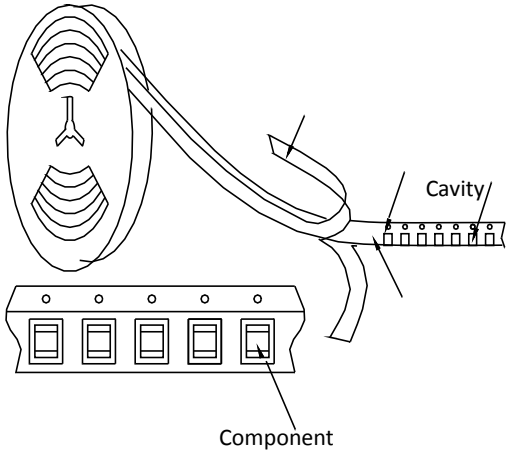


A：3.60±0.20 B：5.00±0.20 （1812）
A：5.60±0.20 B：6.10±0.20 （2220）
(unit : mm)

7.2.3 Dimensions of Reel



7.2.4 Taping Figure



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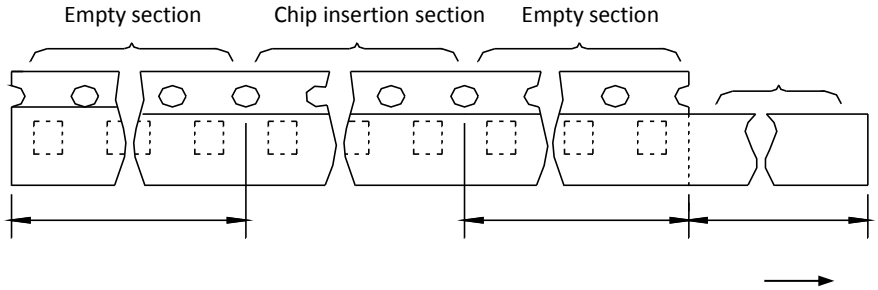


7.2.5 Taping Method

① Tapes for capacitors are wound clockwise. The sprocket holes are to the right as the tape is pulled toward the user.

② The top tape and base tape are not attached at the end of the tape for a minimum of 5 pitches.

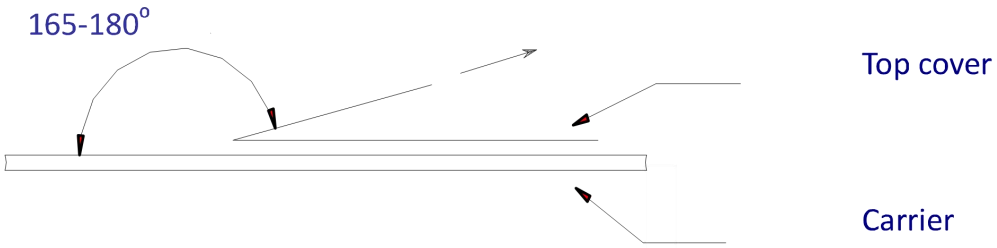
③ Part of the leader and part of the empty tape shall be attached to the end of the tape as follows.

④ Missing capacitors number within 0.1% of the number per reel or 1pc, whichever is greater, and are not continuous.

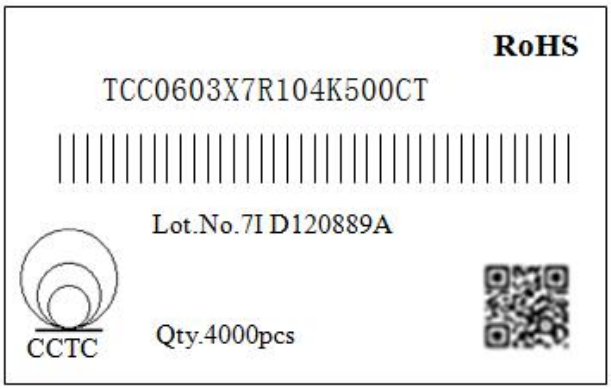
⑤ The top tape and bottom tape shall not protrude beyond the edges of the tape and shall not cover sprocket holes.

⑥ Cumulative tolerance of sprocket holes, 10 pitches: ±0.3mm.

⑦ Peeling off force: 0.1 to 0.6N in the direction shown down.



7.2.6 Reel Label



The Contents of Label

(1) TCC 0603 X7R 104 K 500 C T

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① Code of Ceramic Capacitor, ② chip size, ③ dielectrics, ④ capacitance, ⑤ tolerance, ⑥ rated voltage, ⑦ thickness, ⑧ packing

(2) Lot. No.: 7ID120889A

(3) Qty: 4000pcs

(4) RoHS:GREEN PARTS

7.2.7. Package

7.2.7.1 Carton

7.2.7.1.1 Carton Size

L	W	H
41.0±3cm	38.5±3cm	20.2±3cm

7.2.7.1.2 The Quantity: 240Kpcs /one carton

1 INNER BOX=40,000PCS

1 CARTON=40,000PCS × 6 INNER BOX =240,000PCS

RoHS according to customer request

7.2.7.2 Inner Box

7.2.7.2.1 Size

L	W	H
18±1cm	18.5±1cm	11.8±1cm

7.2.7.2.2 The Quantity: 40Kpcs /one carton； 1 REEL=4,000PCS； 1 INNER BOX=4,000PCS × 10REEL =40,000PCS

8. Precautions on the use of MLCC

8.1 PCB Design

8.1.1 Design of Land-patterns

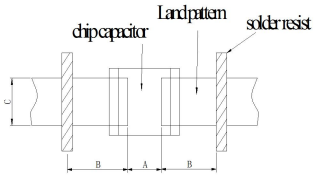
The following diagrams and tables show some examples recommended patterns to prevent excessive solder amounts (larger fillets which above the component end terminations)

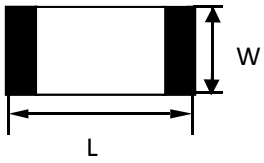
Examples of improper pattern designs are also shown.

Recommended land dimensions for a typical chip capacitor land patterns for PCBs

Recommended land dimensions for wave-soldering (unit: mm)

Specification		0603	0805	1206
Size	L	1.6	2.0	3.2
	W	0.8	1.25	1.6
A		0.8~1.0	1.0~1.4	1.8~2.5
B		0.5~0.8	0.8~1.5	0.8~1.7
C		0.6~0.8	0.9~1.2	1.2~1.6





Recommended land dimensions for reflow-soldering (unit: mm)

SIZE		0105	0201	0402	0603	0805	1206	1210	1812	2220
Size	L	0.4	0.6	1.0	1.6	2.00	3.2	4.5	5.7	3.2
	W	0.2	0.3	0.5	0.8	1.25	1.6	3.2	5.0	2.5
A		0.16~0.20	0.20~0.25	0.35~0.45	0.6~0.8	0.8~1.2	1.8~2.5	1.8~2.5	2.5~3.4	4.0~4.6
B		0.12~0.18	0.20~0.30	0.40~0.50	0.6~0.8	0.8~1.2	1.0~1.5	1.0~1.5	1.8~2.0	2.0~2.2
C		0.20~0.23	0.25~0.35	0.45~0.55	0.6~0.8	0.9~1.6	1.2~2.0	1.6~3.2	2.3~3.5	3.5~4.8

Excess solder can affect the ability of chips to withstand mechanical stresses. Therefore, please take proper precautions when designing land-patterns.

Examples of good and bad solder application

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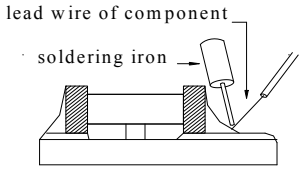
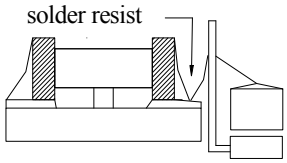
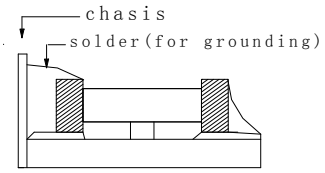
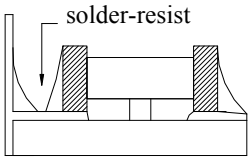
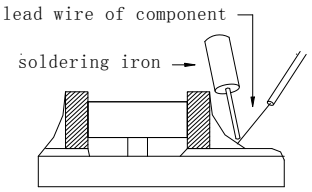
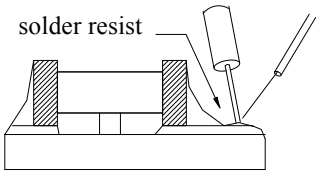
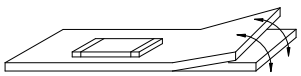
Item	Not recommended	Recommended
Mixed mounting of SMD and leaded component		
Component placement close to the chassis		
Hand-soldering of leaded components near mounted components		

8.1.2 Pattern configurations

The following are examples of good and bad capacitor layout, SMD capacitors should be located to minimize any possible mechanical stresses from board warp or deflection.

	Not recommended	Recommended
Deflection of the board		

To layout the capacitors for the breakaway PC board, it should be noted that the amount of mechanical stresses given depending on capacitor layout. The example below shows recommendations for better design.

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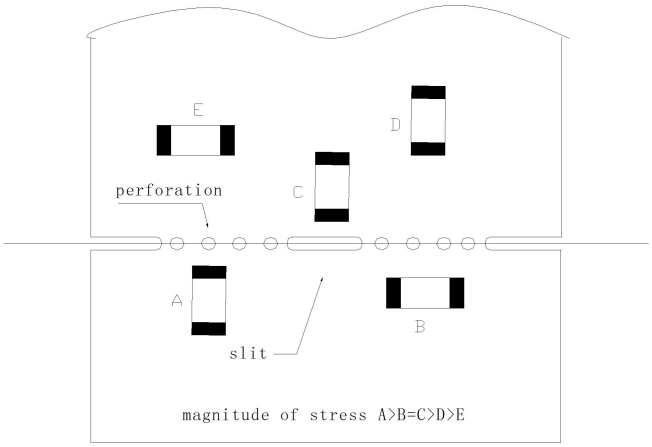


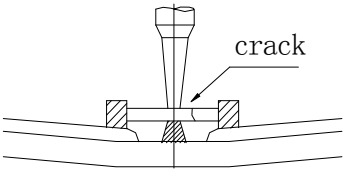
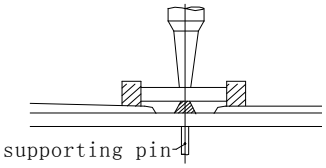
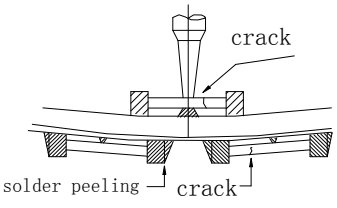
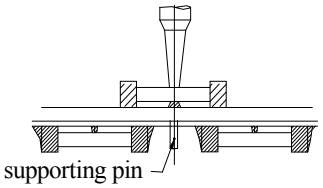
When breaking PC boards along their perforations, the amount lf mechanical stress on the capacitors can vary according to the method used. The following methods are listed in order from least stressful to most stressful: push-back, silt, grooving, and perforation. Thus, any ideal SMD capacitor layout must also consider the PCB splitting procedure.

8.2 Considerations for automatic placement

Adjustment of mounting machine

① Excessive impact load should not be imposed on the capacitors when mounting the PC boards.

② The maintenance and inspection of the mounters should be conducted periodically.

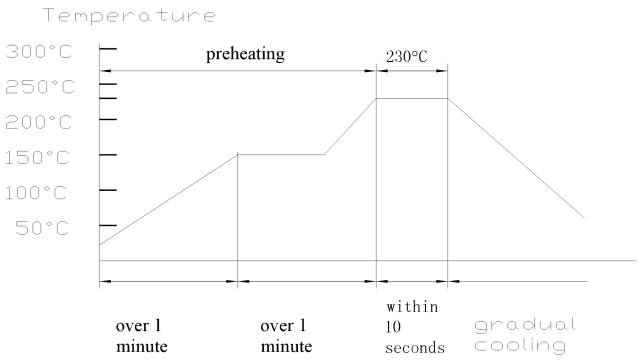
	Not recommended	Recommended
Single-sided mounting		
Double-sided mounting		

8.3 Recommended soldering profile

8.3.1 Instructions：① flow Soldering is recommended；② flow soldering is suitable for bigger size mlccs

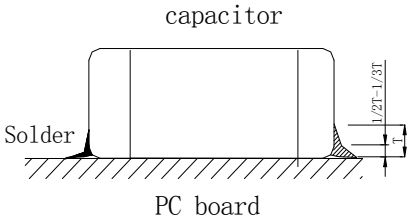
8.3.2 Recommended Sn&Pb soldering profile

Reflow soldering



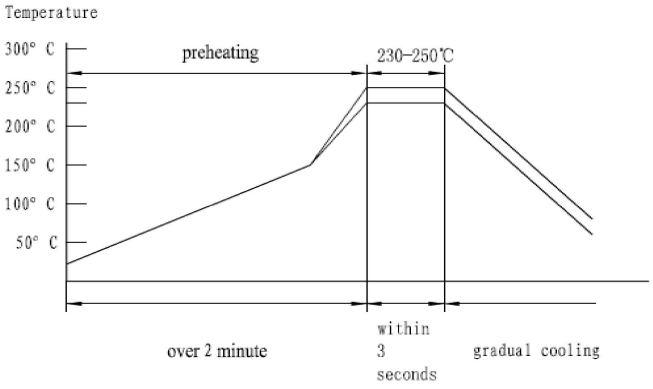
Caution

① The ideal condition is to have solder mass (fillet) controlled to 1/2 to 1/3of the thickness of the capacitor, as shown below:



② Because excessive dwell times can detrimentally affect solderability, soldering duration should be kept as close to recommended times as possible.

Wave solder profile



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Caution

① Make sure the capacitors are preheated sufficiently.

② The temperature difference between the capacitor and melted solder should not be greater than 100 to 130℃.

③ Cooling after soldering should be gradual as possible.

Hand soldering

Preheat	Soldering tip temperature	Soldering power	Diameter of soldering iron head	Welding time	Solder paste content	Restriction condition
△ ≤ 130℃	Up to 350℃	Max. 20W	Recommended 1mm	Up to 5s	≤1/2 chip thickness	Do not use the soldering tip to touch the ceramic element directly

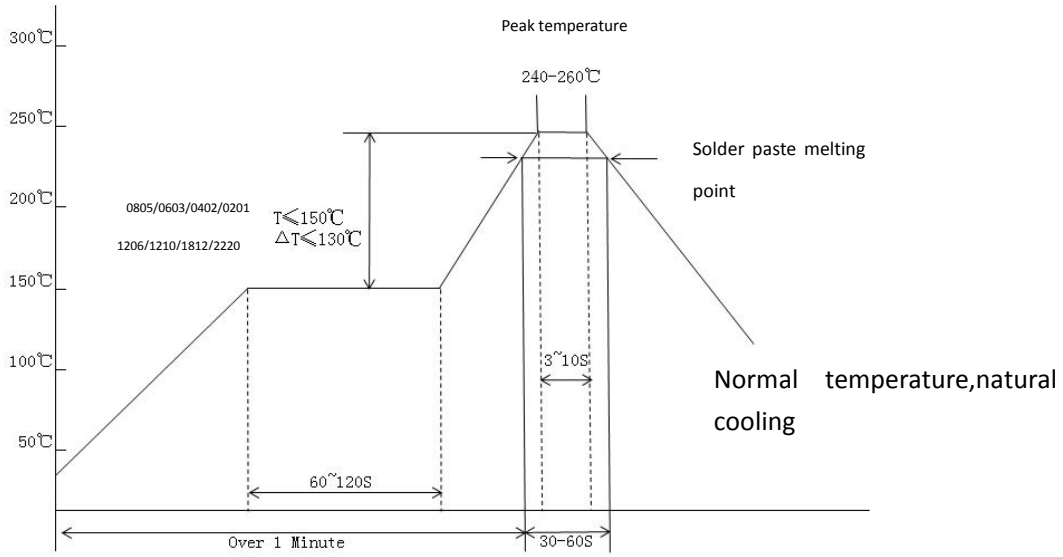
Caution

① Use a 20w soldering iron with a maximum tip diameter of 1.0mm.

② The soldering iron should not directly touch the capacitor.

8.3.3 Recommended Pb-Free soldering profile

Reflow solder



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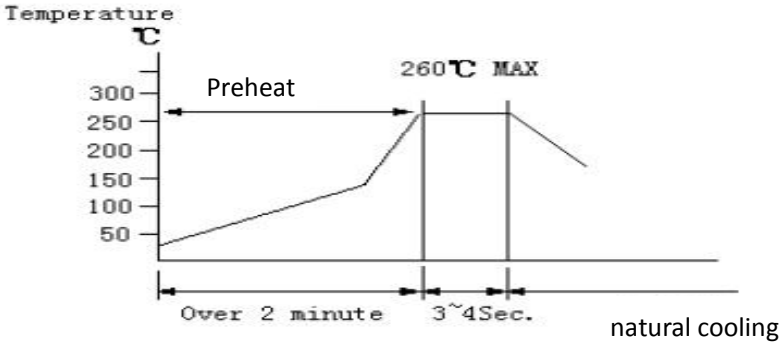
Wave solder profile



Capacitance range of Wave solder profile and Reflow solder：

Welding mode	0402	0603	0805	1206	1210
Wave solder profile	/	Capacitance of 105 and below	Capacitance of 225 and below	Capacitance of 475 and below	/
Reflow solder	All Specifications	All Specifications	All Specifications	All Specifications	All Specifications

8.4 Handling

Breakaway PC boards (splitting along perforations)

(1) When splitting the PC board after mounting capacitors and other components, care is required so as not to give any stresses of deflection or twisting to the board.

(2) Board separation should not be done manually, but by using the appropriate devices.

8.5 Storage

(1) Keep the storage environment conditions as following: Temperature: 5~40℃； Humidity: ≤70% RH

(2) Don't open the tape until the parts are to be used, and store them within one year since the date printed on the reel.

(3) Use the chips within 3 months after the tape is opened.

(4) The capacitance value of high dielectric constant capacitors (X7R/X7S/X7T/X5R/X6R/X6S/X6T) will gradually decrease with the passage of time, so this should be taken into consideration in the circuit design. If such a capacitance reduction occurs, a heat treatment of 150℃ for 1 hour will return the capacitance to its initial level.

8.6 Environmental Declaration

(1) All MLCC products of our comply with RoHS 2.0;

(2) All MLCC products of our comply with the latest REACH regulations;

(3) All MLCC products of our comply meet HF requirements.